



SEQUENCE LISTING

#4

<110> Collier, R. John
Sellman, Brett R.

<120> Compounds and Methods for the Treatment
and Prevention of Bacterial Infection

<130> 00742/060002

<140> US 09/848,909
<141> 2001-04-04

<150> US 60/201,800
<151> 2000-04-04

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<170> FastSEQ for Windows Version 4.0

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35 40 45
Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
50 55 60
Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
65 70 75 80
Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
85 90 95
Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
100 105 110
Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
115 120 125
Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
130 135 140
Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
145 150 155 160
Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
165 170 175
Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
180 185 190
Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
195 200 205
Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
210 215 220
Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
225 230 235 240

Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
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 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
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 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Deu Gln Tyr Gln Gly
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 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
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 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
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 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Deu Ile Arg
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 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
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Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
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 <212> PRT
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 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
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 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
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 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
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 370 375 380
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 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
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 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
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 465 470 475 480
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 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
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 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
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Ile	Asn	Lys	Ala	Ser	Asn	Ser	Asn	Lys	Ile	Arg	Leu	Glu	Lys	Gly	Arg
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Leu	Tyr	Gln	Ile	Lys	Ile	Gln	Tyr	Gln	Arg	Glu	Asn	Pro	Thr	Glu	Lys
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Val	Ile	Ser	Ser	Asp	Asn	Leu	Gln	Leu	Pro	Glu	Leu	Lys	Gln	Lys	Ser
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Thr	Met	Asn	Tyr	Asn	Gln	Phe	Leu	Glu	Leu	Glu	Lys	Thr	Lys	Gln	Leu
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Leu	Pro	Gln	Ile	Gln	Glu	Thr	Thr	Ala	Arg	Ile	Ile	Phe	Asn	Gly	Lys
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Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
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 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
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 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Gln Gln Thr Ser Gln
 545 550 555 560
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 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
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 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
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<210> 4
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 <213> *Bacillus anthracis*

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 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110

Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160

Ser	Asn	Ser	Arg	Lys	Lys	Arg	Ser	Thr	Ser	Ala	Gly	Pro	Thr	Val	Pro
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Thr	Val	Asp	Val	Lys	Asn	Lys	Arg	Thr	Phe	Leu	Ser	Pro	Trp	Ile	Ser
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Ala	Ala	Tyr	Pro	Ile	Val	His	Val	Asp	Met	Glu	Asn	Ile	Ile	Leu	Ser
260							265					270			
Lys	Asn	Glu	Asp	Gln	Ser	Thr	Gln	Asn	Thr	Asp	Ser	Glu	Thr	Arg	Thr
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Ser	Leu	Ser	Leu	Ala	Gly	Glu	Arg	Thr	Trp	Ala	Glu	Thr	Met	Gly	Leu
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Thr	Met	Asn	Tyr	Asn	Gln	Phe	Leu	Glu	Leu	Glu	Lys	Thr	Lys	Gln	Leu
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515									520			525			
Ile	Ala	Phe	Gly	Phe	Asn	Glu	Pro	Asn	Gly	Asn	Leu	Gln	Tyr	Gln	Gly
530									535			540			
Lys	Asp	Ile	Thr	Glu	Phe	Asp	Phe	Asn	Phe	Asp	Gln	Gln	Thr	Ser	Gln
545									550			555			560
Asn	Ile	Lys	Asn	Gln	Leu	Ala	Glu	Leu	Asn	Ala	Thr	Asn	Ile	Tyr	Thr
565									570			575			
Val	Leu	Asp	Lys	Ile	Lys	Leu	Asn	Ala	Lys	Met	Asn	Ile	Leu	Ile	Arg
580									585			590			
Asp	Lys	Arg	Phe	His	Tyr	Asp	Arg	Asn	Asn	Ile	Ala	Val	Gly	Ala	Asp
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Glu	Gly	Leu	Leu	Leu	Asn	Ile	Asp	Lys	Asp	Ile	Arg	Lys	Ile	Leu	Ser
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Gly	Tyr	Ile	Val	Glu	Ile	Glu	Asp	Thr	Glu	Gly	Leu	Lys	Glu	Val	Ile
					645				650						655
Asn	Asp	Arg	Tyr	Asp	Met	Leu	Asn	Ile	Ser	Ser	Leu	Arg	Gln	Asp	Gly
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Lys	Thr	Phe	Ile	Asp	Phe	Lys	Lys	Tyr	Asn	Asp	Lys	Leu	Pro	Leu	Tyr
					675				680						685
Ile	Ser	Asn	Pro	Asn	Tyr	Lys	Val	Asn	Val	Tyr	Ala	Val	Thr	Lys	Glu
					690				695						700
Asn	Thr	Ile	Ile	Asn	Pro	Ser	Glu	Asn	Gly	Asp	Thr	Ser	Thr	Asn	Gly
705					710				715						720
Ile	Lys	Lys	Ile	Leu	Ile	Phe	Ser	Lys	Lys	Gly	Tyr	Glu	Ile	Gly	Glx
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<210> 5
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 <212> PRT
 <213> *Bacillus anthracis*

<400> 5																
Glu	Val	Lys	Gln	Glu	Asn	Arg	Leu	Leu	Asn	Glu	Ser	Glu	Ser	Ser	Ser	
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Met	Val	Val	Thr	Ser	Ser	Thr	Thr	Gly	Asp	Leu	Ser	Ile	Pro	Ser	Ser	
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Glu	Leu	Glu	Asn	Ile	Pro	Ser	Glu	Asn	Gln	Tyr	Phe	Gln	Ser	Ala	Ile	
					50				55						60	
Trp	Ser	Gly	Phe	Ile	Lys	Val	Lys	Ser	Asp	Glu	Tyr	Thr	Phe	Ala		
65					70				75						80	
Thr	Ser	Ala	Asp	Asn	His	Val	Thr	Met	Trp	Val	Asp	Asp	Gln	Glu	Val	
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Ile	Asn	Lys	Ala	Ser	Asn	Ser	Asn	Lys	Ile	Arg	Leu	Glu	Lys	Gly	Arg	
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Leu	Tyr	Gln	Ile	Lys	Ile	Gln	Tyr	Gln	Arg	Glu	Asn	Pro	Thr	Glu	Lys	
					115				120						125	
Gly	Leu	Asp	Phe	Lys	Leu	Tyr	Trp	Thr	Asp	Ser	Gln	Asn	Lys	Lys	Glu	
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Val	Ile	Ser	Ser	Asp	Asn	Leu	Gln	Leu	Pro	Glu	Leu	Lys	Gln	Lys	Ser	
145					150				155						160	
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Asp	Arg	Asp	Asp	Asp	Gly	Ile	Pro	Asp	Ser	Leu	Glu	Val	Glu	Gly	Tyr	
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Thr	Val	Asp	Val	Lys	Asn	Lys	Arg	Thr	Phe	Leu	Ser	Pro	Trp	Ile	Ser	
					195				200						205	
Asn	Ile	His	Glu	Lys	Lys	Gly	Leu	Thr	Lys	Tyr	Lys	Ser	Ser	Pro	Glu	
					210				215						220	
Lys	Trp	Ser	Thr	Ala	Ser	Asp	Pro	Tyr	Ser	Asp	Phe	Glu	Lys	Val	Thr	
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Gly	Arg	Ile	Asp	Lys	Asn	Val	Ser	Pro	Glu	Ala	Arg	His	Pro	Leu	Val	
					245				250						255	
Ala	Ala	Tyr	Pro	Ile	Val	His	Val	Asp	Met	Glu	Asn	Ile	Ile	Leu	Ser	
					260				265						270	
Lys	Asn	Glu	Asp	Gln	Ser	Thr	Gln	Asn	Thr	Asp	Ser	Glu	Thr	Arg	Thr	
					275				280						285	

Ile	Ser	Lys	Asn	Thr	Ser	Thr	Ser	Arg	Thr	His	Thr	Ser	Glu	Val	His
290					295					300					
Gly	Asn	Ala	Glu	Val	His	Ala	Ser	Phe	Phe	Asp	Ile	Gly	Gly	Ser	Val
305					310					315					320
Ser	Ala	Gly	Phe	Ser	Asn	Ser	Ser	Ser	Thr	Val	Ala	Ile	Asp	His	
					325				330				335		
Ser	Leu	Ser	Leu	Ala	Gly	Glu	Arg	Thr	Trp	Ala	Glu	Thr	Met	Gly	Leu
					340				345				350		
Asn	Thr	Ala	Asp	Thr	Ala	Arg	Leu	Asn	Ala	Asn	Ile	Arg	Tyr	Val	Asn
					355				360				365		
Thr	Gly	Thr	Ala	Pro	Ile	Tyr	Asn	Val	Leu	Pro	Thr	Thr	Ser	Leu	Val
					370				375				380		
Leu	Gly	Lys	Asn	Gln	Thr	Leu	Ala	Thr	Ile	Lys	Ala	Lys	Glu	Asn	Gln
385					390				395				400		
Leu	Ser	Gln	Ile	Leu	Ala	Pro	Asn	Asn	Tyr	Tyr	Pro	Ser	Lys	Asn	Leu
					405				410				415		
Ala	Pro	Ile	Ala	Leu	Asn	Ala	Gln	Asp	Asp	Phe	Ser	Ser	Thr	Pro	Ile
					420				425				430		
Thr	Met	Asn	Tyr	Asn	Gln	Phe	Leu	Glu	Leu	Glu	Lys	Thr	Lys	Gln	Leu
					435				440				445		
Arg	Leu	Asp	Thr	Asp	Gln	Val	Tyr	Gly	Asn	Ile	Ala	Thr	Tyr	Asn	Phe
					450				455				460		
Glu	Asn	Gly	Arg	Val	Arg	Val	Asp	Thr	Gly	Ser	Asn	Trp	Ser	Glu	Val
465					470				475				480		
Leu	Pro	Gln	Ile	Gln	Glu	Thr	Thr	Ala	Arg	Ile	Ile	Phe	Asn	Gly	Lys
					485				490				495		
Asp	Leu	Asn	Leu	Val	Glu	Arg	Arg	Ile	Ala	Ala	Val	Asn	Pro	Ser	Asp
					500				505				510		
Pro	Leu	Glu	Thr	Thr	Lys	Pro	Asp	Met	Thr	Leu	Lys	Glu	Ala	Leu	Lys
					515				520				525		
Ile	Ala	Phe	Gly	Phe	Asn	Glu	Pro	Asn	Gly	Asn	Leu	Gln	Tyr	Gln	Gly
					530				535				540		
Lys	Asp	Ile	Thr	Glu	Phe	Asp	Phe	Asn	Phe	Asp	Gln	Gln	Thr	Ser	Gln
545					550				555				560		
Asn	Ile	Lys	Asn	Gln	Leu	Ala	Glu	Leu	Asn	Ala	Thr	Asn	Ile	Tyr	Thr
					565				570				575		
Val	Leu	Asp	Lys	Ile	Lys	Leu	Asn	Ala	Lys	Met	Asn	Ile	Leu	Ile	Arg
					580				585				590		
Asp	Lys	Arg	Phe	His	Tyr	Asp	Arg	Asn	Asn	Ile	Ala	Val	Gly	Ala	Asp
					595				600				605		
Glu	Ser	Val	Val	Lys	Glu	Ala	His	Arg	Glu	Val	Ile	Asn	Ser	Ser	Thr
					610				615				620		
Glu	Gly	Leu	Leu	Leu	Asn	Ile	Asp	Lys	Asp	Ile	Arg	Lys	Ile	Leu	Ser
625					630				635				640		
Gly	Tyr	Ile	Val	Glu	Ile	Glu	Asp	Thr	Glu	Gly	Leu	Lys	Glu	Val	Ile
					645				650				655		
Asn	Asp	Arg	Tyr	Asp	Met	Leu	Asn	Ile	Ser	Ser	Leu	Arg	Gln	Asp	Gly
					660				665				670		
Lys	Thr	Phe	Ile	Asp	Phe	Lys	Lys	Tyr	Asn	Asp	Lys	Leu	Pro	Leu	Tyr
					675				680				685		
Ile	Ser	Asn	Pro	Asn	Tyr	Lys	Val	Asn	Val	Tyr	Ala	Val	Thr	Lys	Glu
					690				695				700		
Asn	Thr	Ile	Ile	Asn	Pro	Ser	Glu	Asn	Gly	Asp	Thr	Ser	Thr	Asn	Gly
705					710				715				720		
Ile	Lys	Lys	Ile	Leu	Ile	Phe	Ser	Lys	Lys	Gly	Tyr	Glu	Ile	Gly	Glx
					725				730				735		

<210> 6
<211> 736
<212> PRT
<213> *Bacillus anthracis*

<400> 6
Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser
1 5 10 15
Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
20 25 30
Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
35 40 45
Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
50 55 60
Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
65 70 75 80
Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
85 90 95
Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
100 105 110
Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
115 120 125
Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
130 135 140
Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
145 150 155 160
Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
165 170 175
Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
180 185 190
Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
195 200 205
Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
210 215 220
Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
225 230 235 240
Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
245 250 255
Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
260 265 270
Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
275 280 285
Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
290 295 300
Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
305 310 315 320
Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
325 330 335
Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
340 345 350
Asn-Thr-Ala-Asp-Thr-Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
355 360 365
Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
370 375 380
Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
385 390 395 400
Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
405 410 415

Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735

<210> 7
 <211> 736
 <212> PRT
 <213> *Bacillus anthracis*

<400> 7
 Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser
 1 5 10 15
 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30

Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80

Thr	Ser	Ala	Asp	Asn	His	Val	Thr	Met	Trp	Val	Asp	Asp	Gln	Glu	Val
							85			90				95	
Ile	Asn	Lys	Ala	Ser	Asn	Ser	Asn	Lys	Ile	Arg	Leu	Glu	Lys	Gly	Arg
							100			105				110	
Leu	Tyr	Gln	Ile	Lys	Ile	Gln	Tyr	Gln	Arg	Glu	Asn	Pro	Thr	Glu	Lys
							115			120				125	
Gly	Leu	Asp	Phe	Lys	Leu	Tyr	Trp	Thr	Asp	Ser	Gln	Asn	Lys	Lys	Glu
							130			135				140	
Val	Ile	Ser	Ser	Asp	Asn	Leu	Gln	Leu	Pro	Glu	Leu	Lys	Gln	Lys	Ser
							145			150				155	
Ser	Asn	Ser	Arg	Lys	Lys	Arg	Ser	Thr	Ser	Ala	Gly	Pro	Thr	Val	Pro
							165			170				175	
Asp	Arg	Asp	Asn	Asp	Gly	Ile	Pro	Asp	Ser	Leu	Glu	Val	Glu	Gly	Tyr
							180			185				190	
Thr	Val	Asp	Val	Lys	Asn	Lys	Arg	Thr	Phe	Leu	Ser	Pro	Trp	Ile	Ser
							195			200				205	
Asn	Ile	His	Glu	Lys	Lys	Gly	Leu	Thr	Lys	Tyr	Lys	Ser	Ser	Pro	Glu
							210			215				220	
Lys	Trp	Ser	Thr	Ala	Ser	Asp	Pro	Tyr	Ser	Asp	Phe	Glu	Lys	Val	Thr
							225			230				235	
Gly	Arg	Ile	Asp	Lys	Asn	Val	Ser	Pro	Glu	Ala	Arg	His	Pro	Leu	Val
							245			250				255	
Ala	Ala	Tyr	Pro	Ile	Val	His	Val	Asp	Met	Glu	Asn	Ile	Ile	Leu	Ser
							260			265				270	
Lys	Asn	Glu	Asp	Gln	Ser	Thr	Gln	Asn	Thr	Asp	Ser	Glu	Thr	Arg	Thr
							275			280				285	
Ile	Ser	Lys	Asn	Thr	Ser	Thr	Ser	Arg	Thr	His	Thr	Ser	Glu	Val	His
							290			295				300	
Gly	Asn	Ala	Glu	Val	His	Ala	Ser	Phe	Phe	Asp	Ile	Gly	Gly	Ser	Val
							305			310				315	
Ser	Ala	Gly	Phe	Ser	Asn	Ser	Asn	Ser	Ser	Thr	Val	Ala	Ile	Asp	His
							325			330				335	
Ser	Leu	Ser	Leu	Ala	Gly	Glu	Arg	Thr	Trp	Ala	Glu	Thr	Met	Gly	Leu
							340			345				350	
Asn	Thr	Ala	Asp	Thr	Ala	Arg	Leu	Asn	Ala	Asn	Ile	Arg	Tyr	Val	Asn
							355			360				365	
Thr	Gly	Thr	Ala	Pro	Ile	Tyr	Asn	Val	Leu	Pro	Thr	Thr	Ser	Leu	Val
							370			375				380	
Leu	Gly	Lys	Asn	Gln	Thr	Leu	Ala	Thr	Ile	Lys	Ala	Lys	Glu	Asn	Gln
							385			390				395	
Leu	Ser	Gln	Ile	Leu	Ala	Pro	Asn	Asn	Tyr	Tyr	Pro	Ser	Lys	Asn	Leu
							405			410				415	
Ala	Pro	Ile	Ala	Leu	Asn	Ala	Gln	Asp	Asp	Phe	Ser	Ser	Thr	Pro	Ile
							420			425				430	
Thr	Met	Asn	Tyr	Asn	Gln	Phe	Leu	Glu	Leu	Glu	Lys	Thr	Lys	Gln	Leu
							435			440				445	
Arg	Leu	Asp	Thr	Asp	Gln	Val	Tyr	Gly	Asn	Ile	Ala	Thr	Tyr	Asn	Phe
							450			455				460	
Glu	Asn	Gly	Arg	Val	Arg	Val	Asp	Thr	Gly	Ser	Asn	Trp	Ser	Glu	Val
							465			470				475	
Leu	Pro	Gln	Ile	Gln	Glu	Thr	Thr	Ala	Arg	Ile	Ile	Phe	Asn	Gly	Lys
							485			490				495	
Asp	Leu	Asn	Leu	Val	Glu	Arg	Arg	Ile	Ala	Ala	Val	Asn	Pro	Ser	Asp
							500			505				510	
Pro	Leu	Glu	Thr	Thr	Lys	Pro	Asp	Met	Thr	Leu	Lys	Glu	Ala	Leu	Lys
							515			520				525	
Ile	Ala	Phe	Gly	Phe	Asn	Glu	Pro	Asn	Gly	Asn	Leu	Gln	Tyr	Gln	Gly
							530			535				540	

Lys Asp Ile Thr Glu Phe Asp Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735

<210> 8
 <211> 736
 <212> PRT
 <213> *Bacillus anthracis*

<400> 8
 Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser
 1 5 10 15
 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160

Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205

Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620

Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670

Lys	Thr	Phe	Ile	Asp	Phe	Lys	Tyr	Asn	Asp	Lys	Leu	Pro	Leu	Tyr	
675						680					685				
Ile	Ser	Asn	Pro	Asn	Tyr	Lys	Val	Asn	Val	Tyr	Ala	Val	Thr	Lys	Glu
690						695					700				
Asn	Thr	Ile	Ile	Asn	Pro	Ser	Glu	Asn	Gly	Asp	Thr	Ser	Thr	Asn	Gly
705						710				715				720	
Ile	Lys	Lys	Ile	Leu	Ile	Phe	Ser	Lys	Lys	Gly	Tyr	Glu	Ile	Gly	Glx
						725				730				735	

<210> 9

<211> 736

<212> PRT

<213> Bacillus anthracis

<400> 9

Glu	Val	Lys	Gln	Glu	Asn	Arg	Leu	Leu	Asn	Glu	Ser	Glu	Ser	Ser	Ser
1				5					10				15		
Gln	Gly	Leu	Leu	Gly	Tyr	Tyr	Phe	Ser	Asp	Leu	Asn	Phe	Gln	Ala	Pro
					20			25				30			
Met	Val	Val	Thr	Ser	Ser	Thr	Thr	Gly	Asp	Leu	Ser	Ile	Pro	Ser	Ser
					35			40				45			
Glu	Leu	Glu	Asn	Ile	Pro	Ser	Glu	Asn	Gln	Tyr	Phe	Gln	Ser	Ala	Ile
					50			55			60				
Trp	Ser	Gly	Phe	Ile	Lys	Val	Lys	Ser	Asp	Glu	Tyr	Thr	Phe	Ala	
					65			70			75		80		
Thr	Ser	Ala	Asp	Asn	His	Val	Thr	Met	Trp	Val	Asp	Asp	Gln	Glu	Val
					85					90			95		
Ile	Asn	Lys	Ala	Ser	Asn	Ser	Asn	Lys	Ile	Arg	Leu	Glu	Lys	Gly	Arg
					100					105			110		
Leu	Tyr	Gln	Ile	Lys	Ile	Gln	Tyr	Gln	Arg	Glu	Asn	Pro	Thr	Glu	Lys
					115				120			125			
Gly	Leu	Asp	Phe	Lys	Leu	Tyr	Trp	Thr	Asp	Ser	Gln	Asn	Lys	Lys	Glu
					130			135			140				
Val	Ile	Ser	Ser	Asp	Asn	Leu	Gln	Leu	Pro	Glu	Leu	Lys	Gln	Lys	Ser
					145			150			155		160		
Ser	Asn	Ser	Arg	Lys	Lys	Arg	Ser	Thr	Ser	Ala	Gly	Pro	Thr	Val	Pro
					165					170			175		
Asp	Arg	Asp	Asp	Gly	Ile	Pro	Asp	Ser	Leu	Glu	Val	Glu	Gly	Tyr	
					180			185			190				
Thr	Val	Asp	Val	Lys	Asn	Lys	Arg	Thr	Phe	Leu	Ser	Pro	Trp	Ile	Ser
					195				200			205			
Asn	Ile	His	Glu	Lys	Lys	Gly	Leu	Thr	Lys	Tyr	Lys	Ser	Ser	Pro	Glu
					210			215			220				
Lys	Trp	Ser	Thr	Ala	Ser	Asp	Pro	Tyr	Ser	Asp	Phe	Glu	Lys	Val	Thr
					225			230			235		240		
Gly	Arg	Ile	Asp	Lys	Asn	Val	Ser	Pro	Glu	Ala	Arg	His	Pro	Leu	Val
					245				250			255			
Ala	Ala	Tyr	Pro	Ile	Val	His	Val	Asp	Met	Glu	Asn	Ile	Ile	Leu	Ser
					260				265			270			
<hr/>															
Lys	Asn	Glu	Asp	Gln	Ser	Thr	Gln	Asn	Thr	Asp	Ser	Glu	Thr	Arg	Thr
						275			280			285			
Ile	Ser	Lys	Asn	Thr	Ser	Thr	Ser	Arg	Thr	His	Thr	Ser	Glu	Val	His
						290			295			300			
Gly	Asn	Ala	Glu	Val	His	Ala	Ser	Phe	Phe	Asp	Ile	Gly	Gly	Ser	Val
					305			310			315		320		
Ser	Ala	Gly	Phe	Ser	Asn	Ser	Asn	Ser	Ser	Thr	Val	Ala	Ile	Asp	His
					325					330			335		

Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735

<210> 10
 <211> 736
 <212> PRT
 <213> *Bacillus anthracis*

<400> 10

Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Ser Ser
 1 5 10 15
 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460

Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735
 740

<210> 11
 <211> 736
 <212> PRT
 <213> *Bacillus anthracis*

<400> 11
 Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser
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 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125

Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile-Ala-Phe-Gly_Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590

Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735

<210> 12
 <211> 736
 <212> PRT
 <213> Bacillus anthracis

<400> 12

Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Ser Ser
 1 5 10 15
 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255

Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670

Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720

Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
725 730 735

<210> 13
<211> 736
<212> PRT
<213> Bacillus anthracis

<400> 13
Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser
1 5 10 15
Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
20 25 30
Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
35 40 45
Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
50 55 60
Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
65 70 75 80
Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
85 90 95
Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
100 105 110
Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
115 120 125
Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
130 135 140
Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
145 150 155 160
Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
165 170 175
Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
180 185 190
Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
195 200 205
Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
210 215 220
Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
225 230 235 240
Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
245 250 255
Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
260 265 270
Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
275 280 285
Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
290 295 300
Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
305 310 315 320
Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
325 330 335

Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
340 345 350
Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
355 360 365
Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
370 375 380

Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735

<210> 14
 <211> 736
 <212> PRT
 <213> *Bacillus anthracis*

<400> 14
 Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser
 1 5 10 15
 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45

Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460

Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510

Pro	Leu	Glu	Thr	Thr	Lys	Pro	Asp	Met	Thr	Leu	Lys	Glu	Ala	Leu	Lys
515						520					525				
Ile	Ala	Phe	Gly	Phe	Asn	Glu	Pro	Asn	Gly	Asn	Leu	Gln	Tyr	Gln	Gly
530						535					540				
Lys	Asp	Ile	Thr	Glu	Phe	Asp	Asn	Phe	Asp	Gln	Gln	Thr	Ser	Gln	
545						550				555				560	
Asn	Ile	Lys	Asn	Gln	Leu	Ala	Glu	Leu	Asn	Ala	Thr	Asn	Ile	Tyr	Thr
565						570				575					
Val	Leu	Asp	Lys	Ile	Lys	Leu	Asn	Ala	Lys	Met	Asn	Ile	Leu	Ile	Arg
580						585				590					
Asp	Lys	Arg	Phe	His	Tyr	Asp	Arg	Asn	Asn	Ile	Ala	Val	Gly	Ala	Asp
595						600				605					
Glu	Ser	Val	Val	Lys	Glu	Ala	His	Arg	Glu	Val	Ile	Asn	Ser	Ser	Thr
610						615				620					
Glu	Gly	Leu	Leu	Leu	Asn	Ile	Asp	Lys	Asp	Ile	Arg	Lys	Ile	Leu	Ser
625						630				635				640	
Gly	Tyr	Ile	Val	Glu	Ile	Glu	Asp	Thr	Glu	Gly	Leu	Lys	Glu	Val	Ile
645						650				655					
Asn	Asp	Arg	Tyr	Asp	Met	Leu	Asn	Ile	Ser	Ser	Leu	Arg	Gln	Asp	Gly
660						665				670					
Lys	Thr	Phe	Ile	Asp	Phe	Lys	Tyr	Asn	Asp	Lys	Leu	Pro	Leu	Tyr	
675						680				685					
Ile	Ser	Asn	Pro	Asn	Tyr	Lys	Val	Asn	Val	Tyr	Ala	Val	Thr	Lys	Glu
690						695				700					
Asn	Thr	Ile	Ile	Asn	Pro	Ser	Glu	Asn	Gly	Asp	Thr	Ser	Thr	Asn	Gly
705						710				715				720	
Ile	Lys	Lys	Ile	Leu	Ile	Phe	Ser	Lys	Lys	Gly	Tyr	Glu	Ile	Gly	Glx
725						730				735					

<210> 15

<211> 736

<212> PRT

<213> Bacillus anthracis

<400> 15

Glu	Val	Lys	Gln	Glu	Asn	Arg	Leu	Leu	Asn	Glu	Ser	Ser	Ser			
1							5			10			15			
Gln	Gly	Leu	Leu	Gly	Tyr	Tyr	Phe	Ser	Asp	Leu	Asn	Phe	Gln	Ala	Pro	
							20			25			30			
Met	Val	Val	Thr	Ser	Ser	Thr	Thr	Thr	Gly	Asp	Leu	Ser	Ile	Pro	Ser	Ser
							35			40			45			
Glu	Leu	Glu	Asn	Ile	Pro	Ser	Glu	Asn	Gln	Tyr	Phe	Gln	Ser	Ala	Ile	
							50			55			60			
Trp	Ser	Gly	Phe	Ile	Lys	Val	Lys	Lys	Ser	Asp	Glu	Tyr	Thr	Phe	Ala	
							65			70			75		80	
Thr	Ser	Ala	Asp	Asn	His	Val	Thr	Met	Trp	Val	Asp	Asp	Gln	Glu	Val	
							85			90			95			
Ile	Asn	Lys	Ala	Ser	Asn	Ser	Asn	Lys	Ile	Arg	Leu	Glu	Lys	Gly	Arg	
							100			105			110			
Leu	Tyr	Gln	Ile	Lys	Ile	Gln	Tyr	Gln	Arg	Glu	Asn	Pro	Thr	Glu	Lys	
							115			120			125			
Gly	Leu	Asp	Phe	Lys	Leu	Tyr	Trp	Thr	Asp	Ser	Gln	Asn	Lys	Lys	Glu	
							130			135			140			
Val	Ile	Ser	Ser	Asp	Asn	Leu	Gln	Leu	Pro	Glu	Leu	Lys	Gln	Lys	Ser	
							145			150			155		160	
Ser	Asn	Ser	Arg	Lys	Lys	Arg	Ser	Thr	Ser	Ala	Gly	Pro	Thr	Val	Pro	
							165			170			175			

Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590

Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640

Gly	Tyr	Ile	Val	Glu	Ile	Glu	Asp	Thr	Glu	Gly	Leu	Lys	Glu	Val	Ile
				645					650						655
Asn	Asp	Arg	Tyr	Asp	Met	Leu	Asn	Ile	Ser	Ser	Leu	Arg	Gln	Asp	Gly
				660					665						670
Lys	Thr	Phe	Ile	Asp	Phe	Lys	Lys	Tyr	Asn	Asp	Lys	Leu	Pro	Leu	Tyr
				675					680						685
Ile	Ser	Asn	Pro	Asn	Tyr	Lys	Val	Asn	Val	Tyr	Ala	Val	Thr	Lys	Glu
				690					695						700
Asn	Thr	Ile	Ile	Asn	Pro	Ser	Glu	Asn	Gly	Asp	Thr	Ser	Thr	Asn	Gly
				705					710						720
Ile	Lys	Lys	Ile	Leu	Ile	Phe	Ser	Lys	Lys	Gly	Tyr	Glu	Ile	Gly	Glx
				725					730						735

<210> 16

<211> 736

<212> PRT

<213> *Bacillus anthracis*

<400> 16

Glu	Val	Lys	Gln	Glu	Asn	Arg	Leu	Leu	Asn	Glu	Ser	Ser	Ser	Ser	Ser
1				5					10						15
Gln	Gly	Leu	Leu	Gly	Tyr	Tyr	Phe	Ser	Asp	Leu	Asn	Phe	Gln	Ala	Pro
					20				25						30
Met	Val	Val	Thr	Ser	Ser	Thr	Thr	Gly	Asp	Leu	Ser	Ile	Pro	Ser	Ser
				35				40							45
Glu	Leu	Glu	Asn	Ile	Pro	Ser	Glu	Asn	Gln	Tyr	Phe	Gln	Ser	Ala	Ile
				50				55							60
Trp	Ser	Gly	Phe	Ile	Lys	Val	Lys	Lys	Ser	Asp	Glu	Tyr	Thr	Phe	Ala
				65				70							80
Thr	Ser	Ala	Asp	Asn	His	Val	Thr	Met	Trp	Val	Asp	Asp	Gln	Glu	Val
					85				85						95
Ile	Asn	Lys	Ala	Ser	Asn	Ser	Asn	Lys	Ile	Arg	Leu	Glu	Lys	Gly	Arg
				100				105							110
Leu	Tyr	Gln	Ile	Lys	Ile	Gln	Tyr	Gln	Arg	Glu	Asn	Pro	Thr	Glu	Lys
				115				120							125
Gly	Leu	Asp	Phe	Lys	Leu	Tyr	Trp	Thr	Asp	Ser	Gln	Asn	Lys	Lys	Glu
				130				135							140
Val	Ile	Ser	Ser	Asp	Asn	Leu	Gln	Leu	Pro	Glu	Leu	Lys	Gln	Lys	Ser
	145				150				155						160
Ser	Asn	Ser	Arg	Lys	Lys	Arg	Ser	Thr	Ser	Ala	Gly	Pro	Thr	Val	Pro
				165				170							175
Asp	Arg	Asp	Asp	Asp	Gly	Ile	Pro	Asp	Ser	Leu	Glu	Val	Glu	Gly	Tyr
				180				185							190
Thr	Val	Asp	Val	Lys	Asn	Lys	Arg	Thr	Phe	Leu	Ser	Pro	Trp	Ile	Ser
				195				200							205
Asn	Ile	His	Glu	Lys	Lys	Gly	Leu	Thr	Lys	Tyr	Lys	Ser	Ser	Pro	Glu
				210				215							220
Lys	Trp	Ser	Thr	Ala	Ser	Asp	Pro	Tyr	Ser	Asp	Phe	Glu	Lys	Val	Thr
	225				230				235						240
Gly	Arg	Ile	Asp	Lys	Asn	Val	Ser	Pro	Glu	Ala	Arg	His	Pro	Leu	Val
				245				250							255
Ala	Ala	Tyr	Pro	Ile	Val	His	Val	Asp	Met	Glu	Asn	Ile	Ile	Leu	Ser
				260				265							270
Lys	Asn	Glu	Asp	Gln	Ser	Thr	Gln	Asn	Thr	Asp	Ser	Glu	Thr	Arg	Thr
				275				280							285
Ile	Ser	Lys	Asn	Thr	Ser	Thr	Ser	Arg	Thr	His	Thr	Ser	Glu	Val	His
				290				295							300

Gly	Asn	Ala	Glu	Val	His	Ala	Ser	Phe	Phe	Asp	Ile	Gly	Gly	Ser	Val
305				310						315					320
Ser	Ala	Gly	Phe	Ser	Asn	Ser	Asn	Ser	Ser	Thr	Val	Ala	Ile	Asp	His
				325						330					335
Ser	Leu	Ser	Leu	Ala	Gly	Glu	Arg	Thr	Trp	Ala	Glu	Thr	Met	Gly	Leu
				340						345					350
Asn	Thr	Ala	Asp	Thr	Ala	Arg	Leu	Asn	Ala	Asn	Ile	Arg	Tyr	Val	Asn
				355						360					365
Thr	Gly	Thr	Ala	Pro	Ile	Tyr	Asn	Val	Leu	Pro	Thr	Thr	Ser	Leu	Val
				370						375					380
Leu	Gly	Lys	Asn	Gln	Thr	Leu	Ala	Thr	Ile	Lys	Ala	Lys	Glu	Asn	Gln
				385						390					400
Leu	Ser	Gln	Ile	Leu	Ala	Pro	Asn	Asn	Tyr	Tyr	Pro	Ser	Lys	Asn	Leu
				405						410					415
Ala	Pro	Ile	Ala	Leu	Asn	Ala	Gln	Asp	Asp	Phe	Ser	Ser	Thr	Pro	Ile
				420						425					430
Thr	Met	Asn	Tyr	Asn	Gln	Phe	Leu	Glu	Leu	Glu	Lys	Thr	Lys	Gln	Leu
				435						440					445
Arg	Leu	Asp	Thr	Asp	Gln	Val	Tyr	Gly	Asn	Ile	Ala	Thr	Tyr	Asn	Phe
				450						455					460
Glu	Asn	Gly	Arg	Val	Arg	Val	Asp	Thr	Gly	Ser	Asn	Trp	Ser	Glu	Val
				465						470					480
Leu	Pro	Gln	Ile	Gln	Glu	Thr	Thr	Ala	Arg	Ile	Ile	Phe	Asn	Gly	Lys
				485						490					495
Asp	Leu	Asn	Leu	Val	Glu	Arg	Arg	Ile	Ala	Ala	Val	Asn	Pro	Ser	Asp
				500						505					510
Pro	Leu	Glu	Thr	Thr	Lys	Pro	Asp	Met	Thr	Leu	Lys	Glu	Ala	Leu	Lys
				515						520					525
Ile	Ala	Phe	Gly	Phe	Asn	Glu	Pro	Asn	Gly	Asn	Leu	Gln	Tyr	Gln	Gly
				530						535					540
Lys	Asp	Ile	Thr	Glu	Phe	Asp	Phe	Asn	Phe	Asp	Gln	Gln	Thr	Ser	Gln
				545						550					560
Asn	Ile	Lys	Asn	Gln	Leu	Ala	Glu	Leu	Asn	Ala	Thr	Asn	Ile	Tyr	Thr
				565						570					575
Val	Leu	Asp	Lys	Ile	Lys	Leu	Asn	Ala	Lys	Met	Asn	Ile	Leu	Ile	Arg
				580						585					590
Asp	Lys	Arg	Phe	His	Tyr	Asp	Arg	Asn	Asn	Ile	Ala	Val	Gly	Ala	Asp
				595						600					605
Glu	Ser	Val	Val	Lys	Glu	Ala	His	Arg	Glu	Val	Ile	Asn	Ser	Ser	Thr
				610						615					620
Glu	Gly	Leu	Leu	Leu	Asn	Ile	Asp	Lys	Asp	Ile	Arg	Lys	Ile	Leu	Ser
				625						630					640
Gly	Tyr	Ile	Val	Glu	Ile	Glu	Asp	Thr	Glu	Gly	Leu	Lys	Glu	Val	Ile
				645						650					655
Asn	Asp	Arg	Tyr	Asp	Met	Leu	Asn	Ile	Ser	Ser	Leu	Arg	Gln	Asp	Gly
				660						665					670
Lys	Thr	Phe	Ile	Asp	Phe	Lys	Lys	Tyr	Asn	Asp	Lys	Leu	Pro	Leu	Tyr
				675						680					685
Ile	Ser	Asn	Pro	Asn	Tyr	Lys	Val	Asn	Val	Tyr	Ala	Val	Thr	Lys	Glu
				690						695					700
Asn	Thr	Ile	Ile	Asn	Pro	Ser	Glu	Asn	Gly	Asp	Thr	Ser	Thr	Asn	Gly
				705						710					720
Ile	Lys	Lys	Ile	Leu	Ile	Phe	Ser	Lys	Lys	Gly	Tyr	Glu	Ile	Gly	Glx
				725						730					735

<210> 17
<211> 736

<212> PRT

<213> Bacillus anthracis

<400> 17

Glu	Val	Lys	Gln	Glu	Asn	Arg	Leu	Leu	Asn	Glu	Ser	Ser	Ser		
1				5					10				15		
Gln	Gly	Leu	Leu	Gly	Tyr	Tyr	Phe	Ser	Asp	Leu	Asn	Phe	Gln	Ala	Pro
					20			25					30		
Met	Val	Val	Thr	Ser	Ser	Thr	Thr	Gly	Asp	Leu	Ser	Ile	Pro	Ser	Ser
				35			40				45				
Glu	Leu	Glu	Asn	Ile	Pro	Ser	Glu	Asn	Gln	Tyr	Phe	Gln	Ser	Ala	Ile
				50			55				60				
Trp	Ser	Gly	Phe	Ile	Lys	Val	Lys	Lys	Ser	Asp	Glu	Tyr	Thr	Phe	Ala
	65				70			75				80			
Thr	Ser	Ala	Asp	Asn	His	Val	Thr	Met	Trp	Val	Asp	Asp	Gln	Glu	Val
					85			90				95			
Ile	Asn	Lys	Ala	Ser	Asn	Ser	Asn	Lys	Ile	Arg	Leu	Glu	Lys	Gly	Arg
				100			105				110				
Leu	Tyr	Gln	Ile	Lys	Ile	Gln	Tyr	Gln	Arg	Glu	Asn	Pro	Thr	Glu	Lys
				115			120				125				
Gly	Leu	Asp	Phe	Lys	Leu	Tyr	Trp	Thr	Asp	Ser	Gln	Asn	Lys	Lys	Glu
	130				135			140							
Val	Ile	Ser	Ser	Asp	Asn	Leu	Gln	Leu	Pro	Glu	Leu	Lys	Gln	Lys	Ser
	145				150			155				160			
Ser	Asn	Ser	Arg	Lys	Lys	Arg	Ser	Thr	Ser	Ala	Gly	Pro	Thr	Val	Pro
				165			170				175				
Asp	Arg	Asp	Asp	Gly	Ile	Pro	Asp	Ser	Leu	Glu	Val	Glu	Gly	Tyr	
				180			185				190				
Thr	Val	Asp	Val	Lys	Asn	Lys	Arg	Thr	Phe	Leu	Ser	Pro	Trp	Ile	Ser
				195			200				205				
Asn	Ile	His	Glu	Lys	Lys	Gly	Leu	Thr	Lys	Tyr	Lys	Ser	Ser	Pro	Glu
				210			215				220				
Lys	Trp	Ser	Thr	Ala	Ser	Asp	Pro	Tyr	Ser	Asp	Phe	Glu	Lys	Val	Thr
	225				230			235				240			
Gly	Arg	Ile	Asp	Lys	Asn	Val	Ser	Pro	Glu	Ala	Arg	His	Pro	Leu	Val
				245			250				255				
Ala	Ala	Tyr	Pro	Ile	Val	His	Val	Asp	Met	Glu	Asn	Ile	Ile	Leu	Ser
				260			265				270				
Lys	Asn	Glu	Asp	Gln	Ser	Thr	Gln	Asn	Thr	Asp	Ser	Glu	Thr	Arg	Thr
				275			280				285				
Ile	Ser	Lys	Asn	Thr	Ser	Thr	Ser	Arg	Thr	His	Thr	Ser	Glu	Val	His
				290			295				300				
Gly	Asn	Ala	Glu	Val	His	Ala	Ser	Phe	Phe	Asp	Ile	Gly	Gly	Ser	Val
	305				310			315				320			
Ser	Ala	Gly	Phe	Ser	Asn	Ser	Asn	Ser	Ser	Thr	Val	Ala	Ile	Asp	His
				325			330				335				
Ser	Leu	Ser	Leu	Ala	Gly	Glu	Arg	Thr	Trp	Ala	Glu	Thr	Met	Gly	Leu
				340			345				350				
Asn	Thr	Ala	Asp	Thr	Ala	Arg	Leu	Asn	Ala	Asn	Ile	Arg	Tyr	Val	Asn
				355			360				365				
Thr	Gly	Thr	Ala	Pro	Ile	Tyr	Asn	Val	Leu	Pro	Thr	Thr	Ser	Leu	Val
				370			375				380				
Leu	Gly	Lys	Asn	Gln	Thr	Leu	Ala	Thr	Ile	Lys	Ala	Lys	Glu	Asn	Gln
	385				390			395				400			
Leu	Ser	Gln	Ile	Leu	Ala	Pro	Asn	Asn	Tyr	Tyr	Pro	Ser	Lys	Asn	Leu
				405			410				415				
Ala	Pro	Ile	Ala	Leu	Asn	Ala	Gln	Asp	Asp	Phe	Ser	Ser	Thr	Pro	Ile
				420			425				430				

Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735

<210> 18
 <211> 736
 <212> PRT
 <213> *Bacillus anthracis*

<400> 18
 Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser
 1 5 10 15
 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95

Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510

Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560

Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735
 725

<210> 19
 <211> 736
 <212> PRT
 <213> *Bacillus anthracis*

<400> 19
 Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Ser Ser
 1 5 10 15
 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220

Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685

Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu		
690	695	700
Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly		
705	710	715
Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx		
725	730	735

<210> 20
 <211> 736
 <212> PRT
 <213> *Bacillus anthracis*

<400> 20			
Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser			
1	5	10	15
Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro			
20	25	30	
Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser			
35	40	45	
Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile			
50	55	60	
Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala			
65	70	75	80
Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val			
85	90	95	
Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg			
100	105	110	
Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys			
115	120	125	
Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu			
130	135	140	
Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser			
145	150	155	160
Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro			
165	170	175	
Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr			
180	185	190	
Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser			
195	200	205	
Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu			
210	215	220	
Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr			
225	230	235	240
Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val			
245	250	255	
Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser			
260	265	270	
Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr			
275	280	285	
<u>Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His</u>			
290	295	300	
Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val			
305	310	315	320
Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His			
325	330	335	
Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu			
340	345	350	

Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735

<210> 21

<211> 736

<212> PRT

<213> *Bacillus anthracis*

<400> 21

Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser Ser
 1 5 10 15

Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95
 Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480

Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Gln Gln Thr Ser Gln
 545 550 555 560
 Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr
 565 570 575
 Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg
 580 585 590
 Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp
 595 600 605
 Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr
 610 615 620
 Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser
 625 630 635 640
 Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile
 645 650 655
 Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly
 660 665 670
 Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr
 675 680 685
 Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu
 690 695 700
 Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly
 705 710 715 720
 Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
 725 730 735

<210> 22
 <211> 2208
 <212> DNA
 <213> *Bacillus anthracis*

<400> 22
 gaagttaaac aggagaacct gttattaaat gaatcagaat caagttccca ggggttacta 60
 ggatactatt ttagtgattt gaatttcaa gcacccatgg ttgttaccc ttctactaca 120
 ggggatttat ctattcttag ttctgagttt gaaaatattt catcgaaaaa ccaatatttt 180
 caatctgcta tttggtcagg atttatcaaa gttttagaaaga gtgtatgata tacatggct 240
 acttccgctg ataatcatgt aacaatgtgg gtagatgacc aagaatgtat taataaagct 300
 tctaattctt acaaaaatcg atttagaaaaa ggaaggatattt atcaaataaa aattcaat 360
 caacgagaaa atcctactga aaaaggattt gattcaatgt tgtagtggac cgattctcaa 420
 aaaaaaaaaa aagtgtttt tagtgataac ttacaattgc cagaattaaa acaaaaatct 480
 tcgaactcaa gaaaaaaagcg aagtacaaatgtt gctggaccta cggttccaga ccgtgacaat 540
 gatggaatcc ctgattcattt agaggatggaa ggtatatacg ttgtatgtcaa aaataaaaaga 600
 actttttt caccatggat ttcttaatattt catgaaaaaaga aaggattaaac caaatataaa 660
 tcatctccctg aaaaatgggg cacggcttct gatccgtaca gtgatttcga aaaggttaca 720
 ggacggattt ataagaatgtt atcaccagag gcaagacacc cccttggcc agcttatccg 780
 attgtacatg tagatgtt gaaatattt ctctcaaaaa atgaggatca atccacacag 840
 aatactgtata gtttggaaatcg aacaataatgtt ctacaatgtt gacacataact 900
 agtgaagtac atggaaatgc agaagtgcattt gctgtttttt ttgtatattgg tgggatgtta 960
 tctgcaggat ttgtatattt gaaatgtt gacgttgcattt ttgtatccatc actatctta 1020
 gcaggggaaaa gaacttgggc tggaaacaatgtt ggtttaataaataa ccgtgatac agcaagat 1080

aatgccaata ttagatatgt aaatactggg acggctccaa tctacaacgt gttaccaacg 1140
 acttcgttag tgtaggaaa aaatcaaaca ctcgcacaa ttaaagctaa ggaaaaccaa 1200
 ttaagtcaaa tacttgccacc taataattat ttccttcta aaaacttggc gccaatcgca 1260
 ttaaatgcac aagacgattt cagttctact ccaattacaa tgaattacaa tcaatttctt 1320
 gagttagaaa aaacgaaaca attaagatta gatacgatc aagtatatgg gaatatacg 1380
 acatacaatt ttgaaaatgg aagagtggg gtggatcacg gctcgactg gagtgaagtg 1440
 ttaccgcaaa ttcaagaaac aactgcacgt atcattttta atggaaaaa tttaaatctg 1500
 gtagaaaggc gtagatcgccg ggttaatcct agtgatccat tagaaacgac taaaccggat 1560
 atgacattaa aagaaggccct taaaatagca tttggattt acgaaccgaa tgaaaactta 1620
 caatatcaag ggaaagacat aaccgaattt gattttaatt tcgatcaaca aacatctcaa 1680
 aatatcaaga atcgttagc ggaattaaac gcaactaaca tatatactgt attagataaa 1740
 atcaaattaa atgcaaaaat gaatattta ataagagata aacgtttca ttatgataga 1800
 aataacatag cagttggggc ggtatgacta gtagttaaagg aggctcatag agaagtaatt 1860
 aattcgtcaa cagagggatt attgttaaat attgataagg atataagaaa aatattatca 1920
 ggttatattg tagaaattga agatactgaa gggcttaaag aagtataaa tgacagatat 1980
 gatatgtga atatttctag tttacggcaa gatggaaaaa cattataga tttaaaaaaa 2040
 tataatgata aattaccgtt atatataagt aatcccaatt ataaggtaaa tgtatatgct 2100
 gttactaaag aaaacactat tattaatcct agtggaaatg gggatactag taccacggg 2160
 atcaagaaaa tttaatctt ttctaaaaaa ggctatgaga taggataa 2208

<210> 23

<211> 736

<212> PRT

<213> *Bacillus anthracis*

<400> 23

Glu	Val	Lys	Gln	Glu	Asn	Arg	Leu	Leu	Asn	Glu	Ser	Ser	Ser		
1				5					10			15			
Gln	Gly	Leu	Leu	Gly	Tyr	Tyr	Phe	Ser	Asp	Leu	Asn	Phe	Gln	Ala	Pro
					20			25				30			
Met	Val	Val	Thr	Ser	Ser	Thr	Thr	Gly	Asp	Leu	Ser	Ile	Pro	Ser	Ser
					35			40				45			
Glu	Leu	Glu	Asn	Ile	Pro	Ser	Glu	Asn	Gln	Tyr	Phe	Gln	Ser	Ala	Ile
					50			55			60				
Trp	Ser	Gly	Phe	Ile	Lys	Val	Lys	Lys	Ser	Asp	Glu	Tyr	Thr	Phe	Ala
					65			70			75			80	
Thr	Ser	Ala	Asp	Asn	His	Val	Thr	Met	Trp	Val	Asp	Asp	Gln	Glu	Val
					85				90				95		
Ile	Asn	Lys	Ala	Ser	Asn	Ser	Asn	Lys	Ile	Arg	Leu	Glu	Lys	Gly	Arg
					100			105			110				
Leu	Tyr	Gln	Ile	Lys	Ile	Gln	Tyr	Gln	Arg	Glu	Asn	Pro	Thr	Glu	Lys
					115			120			125				
Gly	Leu	Asp	Phe	Lys	Leu	Tyr	Trp	Thr	Asp	Ser	Gln	Asn	Lys	Lys	Glu
					130			135			140				
Val	Ile	Ser	Ser	Asp	Asn	Leu	Gln	Leu	Pro	Glu	Leu	Lys	Gln	Lys	Ser
					145			150			155			160	
Ser	Asn	Ser	Arg	Lys	Lys	Arg	Ser	Thr	Ser	Ala	Gly	Pro	Thr	Val	Pro
					165				170			175			
Asp	Arg	Asp	Asp	Gly	Ile	Pro	Asp	Ser	Leu	Glu	Val	Glu	Gly	Tyr	
					180			185			190				
Thr	Val	Asp	Val	Lys	Asn	Lys	Arg	Thr	Phe	Leu	Ser	Pro	Trp	Ile	Ser
					195			200			205				
Asn	Ile	His	Glu	Lys	Lys	Gly	Leu	Thr	Lys	Tyr	Lys	Ser	Ser	Pro	Glu
					210			215			220				
Lys	Trp	Ser	Thr	Ala	Ser	Asp	Pro	Tyr	Ser	Asp	Phe	Glu	Lys	Val	Thr
					225			230			235			240	
Gly	Arg	Ile	Asp	Lys	Asn	Val	Ser	Pro	Glu	Ala	Arg	His	Pro	Leu	Val
					245				250			255			

Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser			
260	265	270	
Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Glu Thr Arg Thr			
275	280	285	
Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His			
290	295	300	
Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val			
305	310	315	320
Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His			
325	330	335	
Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu			
340	345	350	
Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn			
355	360	365	
Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val			
370	375	380	
Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln			
385	390	395	400
Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu			
405	410	415	
Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile			
420	425	430	
Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu			
435	440	445	
Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe			
450	455	460	
Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val			
465	470	475	480
Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys			
485	490	495	
Asp Leu Asn Leu Val Glu Arg Arg Ile Ala Ala Val Asn Pro Ser Asp			
500	505	510	
Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys			
515	520	525	
Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly			
530	535	540	
Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln			
545	550	555	560
Asn Ile Lys Asn Gln Leu Ala Glu Leu Asn Ala Thr Asn Ile Tyr Thr			
565	570	575	
Val Leu Asp Lys Ile Lys Leu Asn Ala Lys Met Asn Ile Leu Ile Arg			
580	585	590	
Asp Lys Arg Phe His Tyr Asp Arg Asn Asn Ile Ala Val Gly Ala Asp			
595	600	605	
Glu Ser Val Val Lys Glu Ala His Arg Glu Val Ile Asn Ser Ser Thr			
610	615	620	
Glu Gly Leu Leu Leu Asn Ile Asp Lys Asp Ile Arg Lys Ile Leu Ser			
625	630	635	640
Gly Tyr Ile Val Glu Ile Glu Asp Thr Glu Gly Leu Lys Glu Val Ile			
645	650	655	
Asn Asp Arg Tyr Asp Met Leu Asn Ile Ser Ser Leu Arg Gln Asp Gly			
660	665	670	
Lys Thr Phe Ile Asp Phe Lys Lys Tyr Asn Asp Lys Leu Pro Leu Tyr			
675	680	685	
Ile Ser Asn Pro Asn Tyr Lys Val Asn Val Tyr Ala Val Thr Lys Glu			
690	695	700	
Asn Thr Ile Ile Asn Pro Ser Glu Asn Gly Asp Thr Ser Thr Asn Gly			
705	710	715	720

Ile Lys Lys Ile Leu Ile Phe Ser Lys Lys Gly Tyr Glu Ile Gly Glx
725 730 735

<210> 24
<211> 599
<212> PRT
<213> Bacillus anthracis

<400> 24
Thr Asp Ser Gln Asn Lys Lys Glu Val Ile Ser Ser Asp Asn Leu Gln
1 5 10 15
Leu Pro Glu Leu Lys Gln Lys Ser Ser Asn Ser Arg Lys Lys Arg Ser
20 25 30
Thr Ser Ala Gly Pro Thr Val Pro Asp Arg Asp Asn Asp Gly Ile Pro
35 40 45
Asp Ser Leu Glu Val Glu Gly Tyr Thr Val Asp Val Lys Asn Lys Arg
50 55 60
Thr Phe Leu Ser Pro Trp Ile Ser Asn Ile His Glu Lys Lys Gly Leu
65 70 75 80
Thr Lys Tyr Lys Ser Ser Pro Glu Lys Trp Ser Thr Ala Ser Asp Pro
85 90 95
Tyr Ser Asp Phe Glu Lys Val Thr Gly Arg Ile Asp Lys Asn Val Ser
100 105 110
Pro Glu Ala Arg His Pro Leu Val Ala Ala Tyr Pro Ile Val His Val
115 120 125
Asp Met Glu Asn Ile Ile Leu Ser Lys Asn Glu Asp Gln Ser Thr Gln
130 135 140
Asn Thr Asp Ser Gln Thr Arg Thr Ile Ser Lys Asn Thr Ser Thr Ser
145 150 155 160
Arg Thr His Thr Ser Glu Val His Gly Asn Ala Glu Val His Ala Ser
165 170 175
Phe Phe Asp Ile Gly Gly Ser Val Ser Ala Gly Phe Ser Asn Ser Asn
180 185 190
Ser Ser Thr Val Ala Ile Asp His Ser Leu Ser Leu Ala Gly Glu Arg
195 200 205
Thr Trp Ala Glu Thr Met Gly Leu Asn Thr Ala Asp Thr Ala Arg Leu
210 215 220
Asn Ala Asn Ile Arg Tyr Val Asn Thr Gly Thr Ala Pro Ile Tyr Asn
225 230 235 240
Val Leu Pro Thr Thr Ser Leu Val Leu Gly Lys Asn Gln Thr Leu Ala
245 250 255
Thr Ile Lys Ala Lys Glu Asn Gln Leu Ser Gln Ile Leu Ala Pro Asn
260 265 270
Asn Tyr Tyr Pro Ser Lys Asn Leu Ala Pro Ile Ala Leu Asn Ala Gln
275 280 285
Asp Asp Phe Ser Ser Thr Pro Ile Thr Met Asn Tyr Asn Gln Phe Leu
290 295 300
Glu Leu Glu Lys Thr Lys Gln Leu Arg Leu Asp Thr Asp Gln Val Tyr
305 310 315 320
Gly Asn Ile Ala Thr Tyr Asn Phe Glu Asn Gly Arg Val Arg Val Asp
325 330 335
Thr Gly Ser Asn Trp Ser Glu Val Leu Pro Gln Ile Gln Glu Thr Thr
340 345 350
Ala Arg Ile Ile Phe Asn Gly Lys Asp Leu Asn Leu Val Glu Arg Arg
355 360 365
Ile Ala Ala Val Asn Pro Ser Asp Pro Leu Glu Thr Thr Lys Pro Asp
370 375 380

Met Thr Leu Lys Glu Ala Leu Lys Ile Ala Phe Gly Phe Asn Glu Pro 400
 385 390 395
 Asn Gly Asn Leu Gln Tyr Gln Gly Lys Asp Ile Thr Glu Phe Asp Phe 415
 405 410
 Asn Phe Asp Gln Gln Thr Ser Gln Asn Ile Lys Asn Gln Leu Ala Glu 430
 420 425 430
 Leu Asn Val Thr Asn Ile Tyr Thr Val Leu Asp Lys Ile Lys Leu Asn 445
 435 440 445
 Ala Lys Met Asn Ile Leu Ile Arg Asp Lys Arg Phe His Tyr Asp Arg 460
 450 455 460
 Asn Asn Ile Ala Val Gly Ala Asp Glu Ser Val Val Lys Glu Ala His 480
 465 470 475 480
 Arg Glu Val Ile Asn Ser Ser Thr Glu Gly Leu Leu Leu Asn Ile Asp 495
 485 490 495
 Lys Asp Ile Arg Lys Ile Leu Ser Gly Tyr Ile Val Glu Ile Glu Asp 510
 500 505 510
 Thr Glu Gly Leu Lys Glu Val Ile Asn Asp Arg Tyr Asp Met Leu Asn 525
 515 520 525
 Tyr Asn Asp Lys Leu Pro Leu Tyr Ile Ser Asn Pro Asn Tyr Lys Val 560
 545 550 555 560
 Asn Val Tyr Ala Val Thr Lys Glu Asn Thr Ile Ile Asn Pro Ser Glu 575
 565 570 575
 Asn Gly Asp Thr Ser Thr Asn Gly Ile Lys Lys Ile Leu Ile Phe Ser 590
 580 585 590
 Lys Lys Gly Tyr Glu Ile Gly
 595

<210> 25
 <211> 705
 <212> PRT
 <213> Clostridium difficile

<400> 25
 Glu Leu Asp Gly Met Lys Lys Ile Ile Pro Glu Glu Asn Leu Phe Leu 15
 1 5 10 15
 Arg Asp Tyr Ser Asn Ile Glu Lys Asp Asp Pro Phe Ile Pro Asn Asn 30
 20 25 30
 Asn Phe Phe Asp Pro Lys Leu Met Ser Asp Trp Glu Asp Glu Asp Leu 45
 35 40 45
 Asp Thr Asp Asn Asp Ile Pro Asp Ser Tyr Glu Arg Asn Gly Tyr 60
 50 55 60
 Thr Ile Lys Asp Leu Ile Ala Val Lys Trp Glu Asp Ser Phe Ala Glu 80
 65 70 75 80
 Gln Gly Tyr Lys Lys Tyr Val Ser Asn Tyr Leu Glu Ser Asn Thr Ala 95
 85 90 95
 Gly Asp Pro Tyr Thr Asp Tyr Glu Lys Ala Ser Gly Ser Phe Asp Lys 110
 100 105 110
 Ala Ile Lys Thr Glu Ala Arg Asp Pro Leu Val Ala Ala Tyr Pro Ile 125
 115 120 125
 Val Gly Val Gly Met Glu Lys Leu Ile Ile Ser Thr Asn Glu His Ala 140
 130 135 140
 Ser Thr Asp Gln Gly Lys Thr Val Ser Arg Ala Thr Thr Asn Ser Lys 160
 145 150 155 160
 Thr Glu Ser Asn Thr Ala Gly Val Ser Val Asn Val Gly Tyr Gln Asn 175
 165 170 175

Gly Phe Thr Ala Asn Val Thr Thr Asn Tyr Ser His Thr Thr Asp Asn
 180 185 190
 Ser Thr Ala Val Gln Asp Ser Asn Gly Glu Ser Trp Asn Thr Gly Leu
 195 200 205
 Ser Ile Asn Lys Gly Glu Ser Ala Tyr Ile Asn Ala Asn Val Arg Tyr
 210 215 220
 Tyr Asn Thr Gly Thr Ala Pro Met Tyr Lys Val Thr Pro Thr Thr Asn
 225 230 235 240
 Leu Val Leu Asp Gly Asp Thr Leu Ser Thr Ile Lys Ala Gln Glu Asn
 245 250 255
 Gln Ile Gly Asn Asn Leu Ser Pro Gly Asp Thr Tyr Pro Lys Lys Gly
 260 265 270
 Leu Ser Pro Leu Ala Leu Asn Thr Met Asp Gln Phe Ser Ser Arg Leu
 275 280 285
 Ile Pro Ile Asn Tyr Asp Gln Leu Lys Leu Asp Ala Gly Lys Gln
 290 295 300
 Ile Lys Leu Glu Thr Thr Gln Val Ser Gly Asn Phe Gly Thr Lys Asn
 305 310 315 320
 Ser Ser Gly Gln Ile Val Thr Glu Gly Asn Ser Trp Ser Asp Tyr Ile
 325 330 335
 Ser Gln Ile Asp Ser Ile Ser Ala Ser Ile Ile Leu Asp Thr Glu Asn
 340 345 350
 Glu Ser Tyr Glu Arg Arg Val Thr Ala Lys Asn Leu Gln Asp Pro Glu
 355 360 365
 Asp Lys Thr Pro Glu Leu Thr Ile Gly Glu Ala Ile Glu Lys Ala Phe
 370 375 380
 Gly Ala Thr Lys Lys Asp Gly Leu Leu Tyr Phe Asn Asp Ile Pro Ile
 385 390 395 400
 Asp Glu Ser Cys Val Glu Leu Ile Phe Asp Asp Asn Thr Ala Asn Lys
 405 410 415
 Ile Lys Asp Ser Leu Lys Thr Leu Ser Asp Lys Lys Ile Tyr Asn Val
 420 425 430
 Lys Leu Glu Arg Gly Met Asn Ile Leu Ile Lys Thr Pro Thr Tyr Phe
 435 440 445
 Thr Asn Phe Asp Asp Tyr Asn Asn Tyr Pro Ser Thr Trp Ser Asn Val
 450 455 460
 Asn Thr Thr Asn Gln Asp Gly Leu Gln Gly Ser Ala Asn Lys Leu Asn
 465 470 475 480
 Gly Glu Thr Lys Ile Lys Ile Pro Met Ser Glu Leu Lys Pro Tyr Lys
 485 490 495
 Arg Tyr Val Phe Ser Gly Tyr Ser Lys Asp Pro Leu Thr Ser Asn Ser
 500 505 510
 Ile Ile Val Lys Ile Lys Ala Lys Glu Glu Lys Thr Asp Tyr Leu Val
 515 520 525
 Pro Glu Gln Gly Tyr Thr Lys Phe Ser Tyr Glu Phe Glu Thr Thr Glu
 530 535 540
 Lys Asp Ser Ser Asn Ile Glu Ile Thr Leu Ile Gly Ser Gly Thr Thr
 545 550 555 560
 Tyr Leu Asp Asn Leu Ser Ile Thr Glu Leu Asn Ser Thr Pro Glu Ile
 565 570 575
 Leu Asp Glu Pro Glu Val Lys Ile Pro Thr Asp Gln Glu Ile Met Asp
 580 585 590

Ala His Lys Ile Tyr Phe Ala Asp Leu Asn Phe Asn Pro Ser Thr Gly
 595 600 605
 Asn Thr Tyr Ile Asn Gly Met Tyr Phe Ala Pro Thr Gln Thr Asn Lys
 610 615 620
 Glu Ala Leu Asp Tyr Ile Gln Lys Tyr Arg Val Glu Ala Thr Leu Gln
 625 630 635 640

Tyr Ser Gly Phe Lys Asp Ile Gly Thr Lys Asp Lys Glu Met Arg Asn	645	650	655
Tyr Leu Gly Asp Pro Asn Gln Pro Lys Thr Asn Tyr Val Asn Leu Arg	660	665	670
Ser Tyr Phe Thr Gly Gly Glu Asn Ile Met Thr Tyr Lys Lys Leu Arg	675	680	685
Ile Tyr Ala Ile Thr Pro Asp Asp Arg Glu Leu Leu Val Leu Ser Val	690	695	700
Asp			
705			

<210> 26

<211> 706

<212> PRT

<213> Clostridium perfringens

<400> 26

Glu Leu Asn Gly Asn Lys Thr Val Ile Pro Glu Glu Asn Leu Phe Phe	1	5	10	15
Arg Asp Tyr Ser Lys Ile Asp Glu Asn Asp Pro Phe Ile Pro Asn Asn	20	25	30	
Asn Phe Phe Asp Val Arg Phe Ser Ala Ala Trp Glu Asp Glu Asp	35	40	45	
Leu Asp Thr Asp Asn Asp Asn Ile Pro Asp Ala Tyr Glu Lys Asn Gly	50	55	60	
Tyr Thr Ile Lys Asp Ser Ile Ala Val Lys Trp Asn Asp Ser Phe Ala	65	70	75	80
Glu Gln Gly Tyr Lys Lys Tyr Val Ser Ser Tyr Leu Glu Ser Asn Thr	85	90	95	
Ala Gly Asp Pro Tyr Thr Asp Tyr Gln Lys Ala Ser Gly Ser Ile Asp	100	105	110	
Lys Ala Ile Lys Leu Glu Ala Arg Asp Pro Leu Val Ala Ala Tyr Pro	115	120	125	
Val Val Gly Val Gly Met Glu Asn Leu Ile Ile Ser Thr Asn Glu His	130	135	140	
Ala Ser Ser Asp Gln Gly Lys Thr Val Ser Arg Ala Thr Thr Asn Ser	145	150	155	160
Lys Thr Asp Ala Asn Thr Val Gly Val Ser Ile Ser Ala Gly Tyr Gln	165	170	175	
Asn Gly Phe Thr Gly Asn Ile Thr Thr Ser Tyr Ser His Thr Thr Asp	180	185	190	
Asn Ser Thr Ala Val Gln Asp Ser Asn Gly Glu Ser Trp Asn Thr Gly	195	200	205	
Leu Ser Ile Asn Lys Gly Glu Ser Ala Tyr Ile Asn Ala Asn Val Arg	210	215	220	
Tyr Tyr Asn Thr Gly Thr Ala Pro Met Tyr Lys Val Thr Pro Thr Thr	225	230	235	240
Asn Leu Val Leu Asp Gly Glu Thr Leu Ala Thr Ile Lys Ala Gln Asp	245	250	255	
Asn Gln Ile Gly Asn Asn Leu Ser Pro Asn Glu Thr Tyr Pro Lys Lys	260	265	270	
Gly Leu Ser Pro Leu Ala Leu Asn Thr Met Asp Gln Phe Asn Ala Arg	275	280	285	
Leu Ile Pro Ile Asn Tyr Asp Gln Leu Lys Lys Leu Asp Ser Gly Lys	290	295	300	
Gln Ile Lys Leu Glu Thr Thr Gln Val Ser Gly Asn Tyr Gly Thr Lys	305	310	315	320

Asn Ser Gln Gly Gln Ile Ile Thr Glu Gly Asn Ser Trp Ser Asn Tyr
 325 330 335
 Ile Ser Gln Ile Asp Ser Val Ser Ala Ser Ile Ile Leu Asp Thr Gly
 340 345 350
 Ser Gln Thr Phe Glu Arg Arg Val Ala Ala Lys Glu Gln Gly Asn Pro
 355 360 365
 Glu Asp Lys Thr Pro Glu Ile Thr Ile Gly Glu Ala Ile Lys Lys Ala
 370 375 380
 Phe Ser Ala Thr Lys Asn Gly Glu Leu Leu Tyr Asn Gly Ile Pro
 385 390 395 400
 Ile Asp Glu Ser Cys Val Glu Leu Ile Phe Asp Asp Asn Thr Ser Glu
 405 410 415
 Ile Ile Lys Glu Gln Leu Lys Tyr Leu Asp Asp Lys Lys Ile Tyr Asn
 420 425 430
 Val Lys Leu Glu Arg Gly Met Asn Ile Leu Ile Lys Val Pro Ser Tyr
 435 440 445
 Phe Thr Asn Phe Asp Glu Tyr Asn Asn Phe Pro Ala Ser Trp Ser Asn
 450 455 460
 Ile Asp Thr Lys Asn Gln Asp Gly Leu Gln Ser Val Ala Asn Lys Leu
 465 470 475 480
 Ser Gly Glu Thr Lys Ile Ile Ile Pro Met Ser Lys Leu Lys Pro Tyr
 485 490 495
 Lys Arg Tyr Val Phe Ser Gly Tyr Ser Lys Asp Pro Ser Thr Ser Asn
 500 505 510
 Ser Ile Thr Val Asn Ile Lys Ser Lys Glu Gln Lys Thr Asp Tyr Leu
 515 520 525
 Val Pro Glu Lys Asp Tyr Thr Lys Phe Ser Tyr Glu Phe Glu Thr Thr
 530 535 540
 Gly Lys Asp Ser Ser Asp Ile Glu Ile Thr Leu Thr Ser Ser Gly Val
 545 550 555 560
 Ile Phe Leu Asp Asn Leu Ser Ile Thr Glu Leu Asn Ser Thr Pro Glu
 565 570 575
 Ile Leu Lys Glu Pro Glu Ile Lys Val Pro Ser Asp Gln Glu Ile Leu
 580 585 590
 Asp Ala His Asn Lys Tyr Tyr Ala Asp Ile Lys Leu Asp Thr Asn Thr
 595 600 605
 Gly Asn Thr Tyr Ile Asp Gly Ile Tyr Phe Glu Pro Thr Gln Thr Asn
 610 615 620
 Lys Glu Ala Leu Asp Tyr Ile Gln Lys Tyr Arg Val Glu Ala Thr Leu
 625 630 635 640
 Gln Tyr Ser Gly Phe Lys Asp Ile Gly Thr Lys Asp Lys Glu Ile Arg
 645 650 655
 Asn Tyr Leu Gly Asp Gln Asn Gln Pro Lys Thr Asn Tyr Ile Asn Phe
 660 665 670
 Arg Ser Tyr Phe Thr Ser Gly Glu Asn Val Met Thr Tyr Lys Lys Leu
 675 680 685
 Arg Ile Tyr Ala Val Thr Pro Asp Asn Arg Glu Leu Leu Val Leu Ser
 690 695 700
 Val Asn
 705

<210> 27
 <211> 712
 <212> PRT
 <213> Clostridium spiroforme

<400> 27

Glu	Leu	Asn	Gly	Asp	Lys	Thr	Leu	Ile	Pro	Glu	Lys	Asn	Leu	Phe	Leu
1										10					15
Arg	Asp	Tyr	Ser	Lys	Ile	Asp	Glu	Asn	Asp	Pro	Phe	Ile	Pro	Lys	Asp
										20	25				30
Asn	Phe	Phe	Asp	Leu	Lys	Leu	Lys	Ser	Arg	Ser	Ala	Arg	Leu	Ala	Ser
										35	40				45
Gly	Trp	Gly	Asp	Glu	Asp	Leu	Asp	Thr	Asp	Asn	Asp	Asn	Ile	Pro	Asp
										50	55				60
Ala	Tyr	Glu	Lys	Asn	Gly	Tyr	Thr	Ile	Lys	Asp	Ser	Ile	Ala	Val	Lys
										65	70				80
Trp	Glu	Asp	Ser	Phe	Ala	Gln	Gln	Gly	Tyr	Lys	Lys	Tyr	Leu	Ser	Ser
										85	90				95
Tyr	Leu	Glu	Ser	Asn	Thr	Ala	Gly	Asp	Pro	Tyr	Thr	Asp	Tyr	Gln	Lys
										100	105				110
Ala	Ser	Gly	Ser	Phe	Asp	Lys	Ala	Ile	Lys	Ala	Glu	Ala	Arg	Asp	Pro
										115	120				125
Leu	Val	Ala	Ala	Tyr	Pro	Val	Val	Gly	Val	Gly	Met	Glu	Lys	Leu	Ile
										130	135				140
Ile	Ser	Thr	Asn	Glu	His	Ala	Ser	Thr	Asp	Gln	Gly	Lys	Thr	Val	Ser
										145	150				160
Arg	Asn	Thr	Thr	Asn	Ser	Lys	Thr	Asp	Ala	Asn	Thr	Ala	Gly	Val	Ala
										165	170				175
Ile	Asn	Ile	Ala	Tyr	Gln	Asn	Gly	Phe	Thr	Gly	Ser	Ile	Thr	Thr	Asn
										180	185				190
Tyr	Ser	His	Thr	Thr	Glu	Asn	Ser	Thr	Ala	Val	Gln	Asn	Ser	Asn	Gly
										195	200				205
Glu	Ser	Trp	Asn	Thr	Ser	Leu	Ser	Ile	Asn	Lys	Gly	Glu	Ser	Ala	Tyr
										210	215				220
Ile	Asn	Ala	Asn	Val	Arg	Tyr	Tyr	Asn	Thr	Gly	Thr	Ala	Pro	Met	Tyr
										225	230				240
Lys	Val	Thr	Pro	Thr	Thr	Asn	Leu	Val	Leu	Asp	Gly	Asp	Thr	Leu	Thr
										245	250				255
Thr	Ile	Lys	Ala	Gln	Asp	Asn	Gln	Ile	Gly	Asn	Asn	Leu	Ser	Pro	Asn
										260	265				270
Glu	Thr	Tyr	Pro	Lys	Lys	Gly	Leu	Ser	Pro	Leu	Ala	Leu	Asn	Thr	Met
										275	280				285
Asp	Gln	Phe	Ser	Ser	Arg	Leu	Ile	Pro	Ile	Asn	Tyr	Asp	Gln	Leu	Lys
										290	295				300
Lys	Leu	Asp	Ala	Gly	Lys	Gln	Ile	Lys	Leu	Glu	Thr	Thr	Gln	Val	Ser
										305	310				320
Gly	Asn	Tyr	Gly	Ile	Lys	Asn	Ser	Gln	Gly	Gln	Ile	Ile	Thr	Glu	Gly
										325	330				335
Asn	Ser	Trp	Ser	Asp	Tyr	Ile	Ser	Gln	Ile	Asp	Ser	Leu	Ser	Ala	Ser
										340	345				350
Ile	Ile	Leu	Asp	Thr	Gly	Ser	Asp	Val	Phe	Glu	Arg	Arg	Val	Thr	Ala
										355	360				365
Lys	Asp	Ser	Ser	Asn	Pro	Glu	Asp	Lys	Thr	Pro	Val	Leu	Thr	Ile	Gly
										370	375				380
Glu	Ala	Ile	Glu	Lys	Ala	Phe	Gly	Ala	Thr	Lys	Asn	Gly	Glu	Ile	Leu
										385	390				400
Tyr	Phe	Asn	Gly	Met	Pro	Ile	Asp	Glu	Ser	Cys	Val	Glu	Leu	Ile	Phe
										405	410				415
Asp	Gly	Asn	Thr	Ala	Asn	Leu	Ile	Lys	Glu	Arg	Leu	Asn	Ala	Leu	Asn
										420	425				430
Asp	Lys	Lys	Ile	Tyr	Asn	Val	Gln	Leu	Glu	Arg	Gly	Met	Lys	Ile	Leu
										435	440				445
Ile	Lys	Thr	Ser	Thr	Tyr	Phe	Asn	Asn	Phe	Asp	Gly	Tyr	Asn	Asn	Phe
										450	455				460

Pro Ser Ser Trp Ser Asn Val Asp Ser Asn Asn Gln Asp Gly Leu Gln
 465 470 475 480
 Asn Ala Ala Asn Lys Leu Ser Gly Glu Thr Lys Ile Val Ile Pro Met
 485 490 495
 Ser Lys Leu Asn Pro Tyr Lys Arg Tyr Val Phe Ser Gly Tyr Leu Lys
 500 505 510
 Asn Ser Ser Thr Ser Asn Pro Ile Thr Val Asn Ile Lys Ala Lys Glu
 515 520 525
 Gln Lys Thr Tyr Asn Leu Val Ser Glu Asn Asp Tyr Lys Lys Phe Ser
 530 535 540
 Tyr Glu Phe Glu Thr Ile Gly Arg Asp Ala Ser Asn Ile Glu Ile Thr
 545 550 555 560
 Leu Thr Ser Ser Gly Thr Ile Phe Leu Asp Asn Leu Ser Ile Thr Glu
 565 570 575
 Leu Asn Ser Thr Pro Glu Ile Leu Lys Glu Pro Asp Ile Lys Val Pro
 580 585 590
 Ser Asp Gln Glu Ile Ile Asp Ala His Lys Lys Tyr Tyr Ala Asp Leu
 595 600 605
 Ser Phe Asn Gln Ser Thr Ala Asn Tyr Tyr Leu Asp Gly Leu Tyr Phe
 610 615 620
 Glu Pro Thr Gln Thr Asn Lys Glu Val Leu Asp Tyr Ile Gln Lys Tyr
 625 630 635 640
 Lys Val Glu Ala Thr Leu Glu Tyr Ser Gly Phe Lys Asp Ile Gly Thr
 645 650 655
 Lys Asp Lys Glu Leu Arg Asn Tyr Thr Gly Asp Ser Asn Gln Pro Lys
 660 665 670
 Thr Asn Tyr Val Asn Phe Arg Ser Tyr Phe Thr Ser Gly Glu Asn Val
 675 680 685
 Met Pro Tyr Lys Lys Leu Arg Ile Tyr Ala Ile Thr Pro Glu Asn Lys
 690 695 700
 Glu Leu Leu Val Leu Ser Ile Asn
 705 710

<210> 28
 <211> 582
 <212> PRT
 <213> Clostridium botulinum

<400> 28

Glu	Thr	Ser	Asp	Ile	Ile	Lys	Glu	Ile	Ile	Pro	Ser	Glu	Val	Leu	Leu
1				5				10						15	
Lys	Pro	Asn	Tyr	Ser	Asn	Thr	Asn	Glu	Lys	Ser	Lys	Phe	Ile	Pro	Asn
					20				25					30	
Asn	Thr	Leu	Phe	Ser	Asn	Ala	Lys	Leu	Lys	Ala	Asn	Ala	Asn	Arg	Asp
					35				40					45	
Thr	Asp	Arg	Asp	Gly	Ile	Pro	Asp	Glu	Trp	Glu	Ile	Asn	Gly	Tyr	Thr
					50				55					60	
Val	Met	Asn	Gln	Lys	Ala	Val	Ala	Trp	Asp	Asp	Lys	Phe	Ala	Ala	Asn
					65				70			75		80	
Gly	Tyr	Lys	Lys	Tyr	Val	Ser	Asn	Pro	Phe	Lys	Pro	Cys	Thr	Ala	Asn
					85				90			95			
Asp	Pro	Tyr	Thr	Asp	Phe	Glu	Lys	Val	Ser	Gly	Gln	Ile	Asp	Pro	Ser
					100				105			110			
Val	Ser	Met	Val	Ala	Arg	Asp	Pro	Met	Ile	Ser	Ala	Tyr	Pro	Ile	Val
					115				120			125			
Gly	Val	Gln	Met	Glu	Arg	Leu	Val	Val	Ser	Lys	Ser	Glu	Thr	Ile	Thr
					130				135			140			

Gly Asp Ser Thr Lys Ser Met Ser Lys Ser Thr Ser His Ser Ser Thr
 145 150 155 160
 Asn Ile Asn Thr Val Gly Ala Glu Val Ser Gly Ser Leu Gln Leu Ala
 165 170 175
 Gly Gly Ile Phe Pro Val Phe Ser Met Ser Ala Ser Ala Asn Tyr Ser
 180 185 190
 His Thr Trp Gln Asn Thr Ser Thr Val Asp Asp Thr Thr Gly Glu Ser
 195 200 205
 Phe Ser Gln Gly Leu Ser Ile Asn Thr Gly Glu Ser Ala Tyr Ile Asn
 210 215 220
 Pro Asn Ile Arg Tyr Tyr Asn Thr Gly Thr Ala Pro Val Tyr Asn Val
 225 230 235 240
 Thr Pro Thr Thr Ile Val Ile Asp Lys Gln Ser Val Ala Thr Ile
 245 250 255
 Lys Gly Gln Glu Ser Leu Ile Gly Asp Tyr Leu Asn Pro Gly Gly Thr
 260 265 270
 Tyr Pro Ile Ile Gly Glu Pro Pro Met Ala Leu Asn Thr Met Asp Gln
 275 280 285
 Phe Ser Ser Arg Leu Ile Pro Ile Asn Tyr Asn Gln Leu Lys Ser Ile
 290 295 300
 Asp Asn Gly Gly Thr Val Met Leu Ser Thr Ser Gln Phe Thr Gly Asn
 305 310 315 320
 Phe Ala Lys Tyr Asn Ser Asn Gly Asn Leu Val Thr Asp Gly Asn Asn
 325 330 335
 Trp Gly Pro Tyr Leu Gly Thr Ile Lys Ser Thr Thr Ala Ser Leu Thr
 340 345 350
 Leu Ser Phe Ser Gly Gln Thr Thr Gln Val Ala Val Val Ala Pro Asn
 355 360 365
 Phe Ser Asp Pro Glu Asp Lys Thr Pro Lys Leu Thr Leu Glu Gln Ala
 370 375 380
 Leu Val Lys Ala Phe Ala Leu Glu Lys Lys Asn Gly Lys Phe Tyr Phe
 385 390 395 400
 His Gly Leu Glu Ile Ser Lys Asn Glu Lys Ile Gln Val Phe Leu Asp
 405 410 415
 Ser Asn Thr Asn Asn Asp Phe Glu Asn Gln Leu Lys Asn Thr Ala Asp
 420 425 430
 Lys Asp Ile Met His Cys Ile Ile Lys Arg Asn Met Asn Ile Leu Val
 435 440 445
 Lys Val Ile Thr Phe Lys Glu Asn Ile Ser Ser Ile Asn Ile Ile Asn
 450 455 460
 Asp Thr Asn Phe Gly Val Gln Ser Met Thr Gly Leu Ser Asn Arg Ser
 465 470 475 480
 Lys Gly Gln Asp Gly Ile Tyr Arg Ala Ala Thr Thr Ala Phe Ser Phe
 485 490 495
 Lys Ser Lys Glu Leu Lys Tyr Pro Glu Gly Arg Tyr Arg Met Arg Phe
 500 505 510
 Val Ile Gln Ser Tyr Glu Pro Phe Thr Cys Asn Phe Lys Leu Phe Asn
 515 520 525
 Asn Leu Ile Tyr Ser Ser Ser Phe Asp Lys Gly Tyr Tyr Asp Glu Phe
 530 535 540
 Phe Tyr Phe Tyr Tyr Asn Gly Ser Lys Ser Phe Phe Asn Ile Ser Cys
 545 550 555 560
 Asp Ile Ile Asn Ser Ile Asn Arg Leu Ser Gly Val Phe Leu Ile Glu
 565 570 575
 Leu Asp Lys Leu Ile Ile
 580

<210> 29
<211> 708
<212> PRT
<213> *Bacillus cereus*

<400> 29
Ile Asp Ser Gln Asn Gln Pro Gln Gln Val Gln Gln Asp Glu Leu Arg
1 5 10 15
Asn Pro Glu Phe Asn Lys Lys Glu Ser Gln Glu Phe Leu Ala Lys Pro
20 25 30
Ser Lys Ile Asn Leu Phe Thr Gln Gln Met Lys Arg Glu Ile Asp Glu
35 40 45
Asp Thr Asp Thr Asp Gly Asp Ser Ile Pro Asp Leu Trp Glu Glu Asn
50 55 60
Gly Tyr Thr Ile Gln Asn Arg Ile Ala Val Lys Trp Asp Asp Ser Leu
65 70 75 80
Ala Ser Lys Gly Tyr Thr Lys Phe Val Ser Asn Pro Leu Glu Ser His
85 90 95
Thr Val Gly Asp Pro Tyr Thr Asp Tyr Glu Lys Ala Ala Arg Asp Leu
100 105 110
Asp Leu Ser Asn Ala Lys Glu Thr Phe Asn Pro Leu Val Ala Ala Phe
115 120 125
Pro Ser Val Asn Val Ser Met Glu Lys Val Ile Leu Ser Pro Asn Glu
130 135 140
Asn Leu Ser Asn Ser Val Glu Ser His Ser Ser Thr Asn Trp Ser Tyr
145 150 155 160
Thr Asn Thr Glu Gly Ala Ser Val Glu Ala Gly Ile Gly Pro Lys Gly
165 170 175
Ile Ser Phe Gly Val Ser Val Asn Tyr Gln His Ser Glu Thr Val Ala
180 185 190
Gln Glu Trp Gly Thr Ser Thr Gly Asn Thr Ser Gln Phe Asn Thr Ala
195 200 205
Ser Ala Gly Tyr Leu Asn Ala Asn Val Arg Tyr Asn Asn Val Gly Thr
210 215 220
Gly Ala Ile Tyr Asp Val Lys Pro Thr Thr Ser Phe Val Leu Asn Asn
225 230 235 240
Asp Thr Ile Ala Thr Ile Thr Ala Lys Ser Asn Ser Thr Ala Leu Asn
245 250 255
Ile Ser Pro Gly Glu Ser Tyr Pro Lys Lys Gly Gln Asn Gly Ile Ala
260 265 270
Ile Thr Ser Met Asp Asp Phe Asn Ser His Pro Ile Thr Leu Asn Lys
275 280 285
Lys Gln Val Asp Asn Leu Leu Asn Asn Lys Pro Met Met Leu Glu Thr
290 295 300
Asn Gln Thr Asp Gly Val Tyr Lys Ile Lys Asp Thr His Gly Asn Ile
305 310 315 320
Val Thr Gly Glu Trp Asn Gly Val Ile Gln Gln Ile Lys Ala Lys
325 330 335
Thr Ala Ser Ile Ile Val Asp Asp Gly Glu Arg Val Ala Glu Lys Arg
340 345 350
Val-Ala-Ala-Lys-Asp-Tyr-Glu-Asn_Pro_Glu_Asp_Lys_Thr_Pro_Ser_Leu
355 360 365
Thr Leu Lys Asp Ala Leu Lys Leu Ser Tyr Pro Asp Glu Ile Lys Glu
370 375 380
Ile Glu Gly Leu Leu Tyr Tyr Lys Asn Lys Pro Ile Tyr Glu Ser Ser
385 390 395 400
Val Met Thr Tyr Leu Asp Glu Asn Thr Ala Lys Glu Val Thr Lys Gln
405 410 415

Leu Asn Asp Thr Thr Gly Lys Phe Lys Asp Val Ser His Leu Tyr Asp
 420 425 430
 Val Lys Leu Thr Pro Lys Met Asn Val Thr Ile Lys Leu Ser Ile Leu
 435 440 445
 Tyr Asp Asn Ala Glu Ser Asn Asp Asn Ser Ile Gly Lys Trp Thr Asn
 450 455 460
 Thr Asn Ile Val Ser Gly Gly Asn Asn Gly Lys Lys Gln Tyr Ser Ser
 465 470 475 480
 Asn Asn Pro Asp Ala Asn Leu Thr Leu Asn Thr Asp Ala Gln Glu Lys
 485 490 495
 Leu Asn Lys Asn Arg Asp Tyr Tyr Ile Ser Leu Tyr Met Lys Ser Glu
 500 505 510
 Lys Asn Thr Gln Cys Glu Ile Thr Ile Asp Gly Glu Ile Tyr Pro Ile
 515 520 525
 Thr Thr Lys Thr Val Asn Val Asn Lys Asp Asn Tyr Lys Arg Leu Asp
 530 535 540
 Ile Ile Ala His Asn Ile Lys Ser Asn Pro Ile Ser Ser Leu His Ile
 545 550 555 560
 Lys Thr Asn Asp Glu Ile Thr Leu Phe Trp Asp Asp Ile Ser Ile Thr
 565 570 575
 Asp Val Ala Ser Ile Lys Pro Glu Asn Leu Thr Asp Ser Glu Ile Lys
 580 585 590
 Gln Ile Tyr Ser Arg Tyr Gly Ile Lys Leu Glu Asp Gly Ile Leu Ile
 595 600 605
 Asp Lys Lys Gly Gly Ile His Tyr Gly Glu Phe Ile Asn Glu Ala Ser
 610 615 620
 Phe Asn Ile Glu Pro Leu Gln Asn Tyr Val Thr Lys Tyr Glu Val Thr
 625 630 635 640
 Tyr Ser Ser Glu Leu Gly Pro Asn Val Ser Asp Thr Leu Glu Ser Asp
 645 650 655
 Lys Ile Tyr Lys Asp Gly Thr Ile Lys Phe Asp Phe Thr Lys Tyr Ser
 660 665 670
 Lys Asn Glu Gln Gly Leu Phe Tyr Asp Ser Gly Leu Asn Trp Asp Phe
 675 680 685
 Lys Ile Asn Ala Ile Thr Tyr Asp Gly Lys Glu Met Asn Val Phe His
 690 695 700
 Arg Tyr Asn Lys
 705

<210> 30
 <211> 735
 <212> PRT
 <213> *Bacillus anthracis*

<400> 30
 Glu Val Lys Gln Glu Asn Arg Leu Leu Asn Glu Ser Glu Ser Ser
 1 5 10 15
 Gln Gly Leu Leu Gly Tyr Tyr Phe Ser Asp Leu Asn Phe Gln Ala Pro
 20 25 30
 Met Val Val Thr Ser Ser Thr Thr Gly Asp Leu Ser Ile Pro Ser Ser
 35 40 45
 Glu Leu Glu Asn Ile Pro Ser Glu Asn Gln Tyr Phe Gln Ser Ala Ile
 .50 55 60
 Trp Ser Gly Phe Ile Lys Val Lys Lys Ser Asp Glu Tyr Thr Phe Ala
 65 70 75 80
 Thr Ser Ala Asp Asn His Val Thr Met Trp Val Asp Asp Gln Glu Val
 85 90 95

Ile Asn Lys Ala Ser Asn Ser Asn Lys Ile Arg Leu Glu Lys Gly Arg
 100 105 110
 Leu Tyr Gln Ile Lys Ile Gln Tyr Gln Arg Glu Asn Pro Thr Glu Lys
 115 120 125
 Gly Leu Asp Phe Lys Leu Tyr Trp Thr Asp Ser Gln Asn Lys Lys Glu
 130 135 140
 Val Ile Ser Ser Asp Asn Leu Gln Leu Pro Glu Leu Lys Gln Lys Ser
 145 150 155 160
 Ser Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val Pro
 165 170 175
 Asp Arg Asp Asn Asp Gly Ile Pro Asp Ser Leu Glu Val Glu Gly Tyr
 180 185 190
 Thr Val Asp Val Lys Asn Lys Arg Thr Phe Leu Ser Pro Trp Ile Ser
 195 200 205
 Asn Ile His Glu Lys Lys Gly Leu Thr Lys Tyr Lys Ser Ser Pro Glu
 210 215 220
 Lys Trp Ser Thr Ala Ser Asp Pro Tyr Ser Asp Phe Glu Lys Val Thr
 225 230 235 240
 Gly Arg Ile Asp Lys Asn Val Ser Pro Glu Ala Arg His Pro Leu Val
 245 250 255
 Ala Ala Tyr Pro Ile Val His Val Asp Met Glu Asn Ile Ile Leu Ser
 260 265 270
 Lys Asn Glu Asp Gln Ser Thr Gln Asn Thr Asp Ser Gln Thr Arg Thr
 275 280 285
 Ile Ser Lys Asn Thr Ser Thr Ser Arg Thr His Thr Ser Glu Val His
 290 295 300
 Gly Asn Ala Glu Val His Ala Ser Phe Phe Asp Ile Gly Gly Ser Val
 305 310 315 320
 Ser Ala Gly Phe Ser Asn Ser Asn Ser Ser Thr Val Ala Ile Asp His
 325 330 335
 Ser Leu Ser Leu Ala Gly Glu Arg Thr Trp Ala Glu Thr Met Gly Leu
 340 345 350
 Asn Thr Ala Asp Thr Ala Arg Leu Asn Ala Asn Ile Arg Tyr Val Asn
 355 360 365
 Thr Gly Thr Ala Pro Ile Tyr Asn Val Leu Pro Thr Thr Ser Leu Val
 370 375 380
 Leu Gly Lys Asn Gln Thr Leu Ala Thr Ile Lys Ala Lys Glu Asn Gln
 385 390 395 400
 Leu Ser Gln Ile Leu Ala Pro Asn Asn Tyr Tyr Pro Ser Lys Asn Leu
 405 410 415
 Ala Pro Ile Ala Leu Asn Ala Gln Asp Asp Phe Ser Ser Thr Pro Ile
 420 425 430
 Thr Met Asn Tyr Asn Gln Phe Leu Glu Leu Glu Lys Thr Lys Gln Leu
 435 440 445
 Arg Leu Asp Thr Asp Gln Val Tyr Gly Asn Ile Ala Thr Tyr Asn Phe
 450 455 460
 Glu Asn Gly Arg Val Arg Val Asp Thr Gly Ser Asn Trp Ser Glu Val
 465 470 475 480
 Leu Pro Gln Ile Gln Glu Thr Thr Ala Arg Ile Ile Phe Asn Gly Lys
 485 490 495
 Asp-Leu-Asn-Leu-Val-Glu-Arg-Arg-Ile-Ala-Ala-Val-Asn-Pro-Ser-Asp
 500 505 510
 Pro Leu Glu Thr Thr Lys Pro Asp Met Thr Leu Lys Glu Ala Leu Lys
 515 520 525
 Ile Ala Phe Gly Phe Asn Glu Pro Asn Gly Asn Leu Gln Tyr Gln Gly
 530 535 540
 Lys Asp Ile Thr Glu Phe Asp Phe Asn Phe Asp Gln Gln Thr Ser Gln
 545 550 555 560

Asn	Ile	Lys	Asn	Gln	Leu	Ala	Glu	Leu	Asn	Val	Thr	Asn	Ile	Tyr	Thr
				565				570						575	
Val	Leu	Asp	Lys	Ile	Lys	Leu	Asn	Ala	Lys	Met	Asn	Ile	Leu	Ile	Arg
				580				585						590	
Asp	Lys	Arg	Phe	His	Tyr	Asp	Arg	Asn	Asn	Ile	Ala	Val	Gly	Ala	Asp
				595				600					605		
Glu	Ser	Val	Val	Lys	Glu	Ala	His	Arg	Glu	Val	Ile	Asn	Ser	Ser	Thr
				610				615					620		
Glu	Gly	Leu	Leu	Leu	Asn	Ile	Asp	Lys	Asp	Ile	Arg	Lys	Ile	Leu	Ser
				625				630				635		640	
Gly	Tyr	Ile	Val	Glu	Ile	Glu	Asp	Thr	Glu	Gly	Leu	Lys	Glu	Val	Ile
				645				650				655			
Asn	Asp	Arg	Tyr	Asp	Met	Leu	Asn	Ile	Ser	Ser	Leu	Arg	Gln	Asp	Gly
				660				665				670			
Lys	Thr	Phe	Ile	Asp	Phe	Lys	Lys	Tyr	Asn	Asp	Lys	Leu	Pro	Leu	Tyr
				675				680				685			
Ile	Ser	Asn	Pro	Asn	Tyr	Lys	Val	Asn	Val	Tyr	Ala	Val	Thr	Lys	Glu
				690				695				700			
Asn	Thr	Ile	Ile	Asn	Pro	Ser	Glu	Asn	Gly	Asp	Thr	Ser	Thr	Asn	Gly
				705				710				715		720	
Ile	Lys	Lys	Ile	Leu	Ile	Phe	Ser	Lys	Lys	Gly	Tyr	Glu	Ile	Gly	
				725				730				735			

<210> 31

<211> 876

<212> PRT

<213> Clostridium difficile

<400> 31

Met	Lys	Ile	Gln	Met	Arg	Asn	Lys	Lys	Val	Leu	Ser	Phe	Leu	Thr	Leu
1				5				10					15		
Thr	Ala	Ile	Val	Ser	Gln	Ala	Leu	Val	Tyr	Pro	Val	Tyr	Ala	Gln	Thr
				20				25					30		
Ser	Thr	Ser	Asn	His	Ser	Asn	Lys	Lys	Glu	Ile	Val	Asn	Glu	Asp	
				35				40				45			
Ile	Leu	Pro	Asn	Asn	Gly	Leu	Met	Gly	Tyr	Tyr	Phe	Ser	Asp	Glu	His
				50				55				60			
Phe	Lys	Asp	Leu	Lys	Leu	Met	Ala	Pro	Ile	Lys	Asp	Gly	Asn	Leu	Lys
				65				70				75		80	
Phe	Glu	Glu	Lys	Lys	Val	Asp	Lys	Leu	Leu	Asp	Lys	Asp	Lys	Ser	Asp
				85				90				95			
Val	Lys	Ser	Ile	Arg	Trp	Thr	Gly	Arg	Ile	Ile	Pro	Ser	Lys	Asp	Gly
				100				105				110			
Glu	Tyr	Thr	Leu	Ser	Thr	Asp	Arg	Asp	Asp	Val	Leu	Met	Gln	Val	Asn
				115				120				125			
Thr	Glu	Ser	Thr	Ile	Ser	Asn	Thr	Leu	Lys	Val	Asn	Met	Lys	Lys	Gly
				130				135				140			
Lys	Glu	Tyr	Lys	Val	Arg	Ile	Glu	Leu	Gln	Asp	Lys	Asn	Leu	Gly	Ser
				145				150				155		160	
Ile	Asp	Asn	Leu	Ser	Ser	Pro	Asn	Leu	Tyr	Trp	Glu	Leu	Asp	Gly	Met
				165				170				175			
Lys	Lys	Ile	Ile	Pro	Glu	Glu	Asn	Leu	Phe	Leu	Arg	Asp	Tyr	Ser	Asn
				180				185				190			
Ile	Glu	Lys	Asp	Asp	Pro	Phe	Ile	Pro	Asn	Asn	Phe	Phe	Asp	Pro	
				195				200				205			
Lys	Leu	Met	Ser	Asp	Trp	Glu	Asp	Glu	Asp	Leu	Asp	Thr	Asp	Asn	Asp
				210				215				220			

Asn Ile Pro Asp Ser Tyr Glu Arg Asn Gly Tyr Thr Ile Lys Asp Leu			
225	230	235	240
Ile Ala Val Lys Trp Glu Asp Ser Phe Ala Glu Gln Gly Tyr Lys Lys			
245	250		255
Tyr Val Ser Asn Tyr Leu Glu Ser Asn Thr Ala Gly Asp Pro Tyr Thr			
260	265		270
Asp Tyr Glu Lys Ala Ser Gly Ser Phe Asp Lys Ala Ile Lys Thr Glu			
275	280	285	
Ala Arg Asp Pro Leu Val Ala Ala Tyr Pro Ile Val Gly Val Gly Met			
290	295	300	
Glu Lys Leu Ile Ile Ser Thr Asn Glu His Ala Ser Thr Asp Gln Gly			
305	310	315	320
Lys Thr Val Ser Arg Ala Thr Thr Asn Ser Lys Thr Glu Ser Asn Thr			
325	330	335	
Ala Gly Val Ser Val Asn Val Gly Tyr Gln Asn Gly Phe Thr Ala Asn			
340	345		350
Val Thr Thr Asn Tyr Ser His Thr Thr Asp Asn Ser Thr Ala Val Gln			
355	360	365	
Asp Ser Asn Gly Glu Ser Trp Asn Thr Gly Leu Ser Ile Asn Lys Gly			
370	375	380	
Glu Ser Ala Tyr Ile Asn Ala Asn Val Arg Tyr Tyr Asn Thr Gly Thr			
385	390	395	400
Ala Pro Met Tyr Lys Val Thr Pro Thr Thr Asn Leu Val Leu Asp Gly			
405	410	415	
Asp Thr Leu Ser Thr Ile Lys Ala Gln Glu Asn Gln Ile Gly Asn Asn			
420	425	430	
Leu Ser Pro Gly Asp Thr Tyr Pro Lys Lys Gly Leu Ser Pro Leu Ala			
435	440	445	
Leu Asn Thr Met Asp Gln Phe Ser Ser Arg Leu Ile Pro Ile Asn Tyr			
450	455	460	
Asp Gln Leu Lys Lys Leu Asp Ala Gly Lys Gln Ile Lys Leu Glu Thr			
465	470	475	480
Thr Gln Val Ser Gly Asn Phe Gly Thr Lys Asn Ser Ser Gly Gln Ile			
485	490	495	
Val Thr Glu Gly Asn Ser Trp Ser Asp Tyr Ile Ser Gln Ile Asp Ser			
500	505	510	
Ile Ser Ala Ser Ile Ile Leu Asp Thr Glu Asn Glu Ser Tyr Glu Arg			
515	520	525	
Arg Val Thr Ala Lys Asn Leu Gln Asp Pro Glu Asp Lys Thr Pro Glu			
530	535	540	
Leu Thr Ile Gly Glu Ala Ile Glu Lys Ala Phe Gly Ala Thr Lys Lys			
545	550	555	560
Asp Gly Leu Leu Tyr Phe Asn Asp Ile Pro Ile Asp Glu Ser Cys Val			
565	570	575	
Glu Leu Ile Phe Asp Asp Asn Thr Ala Asn Lys Ile Lys Asp Ser Leu			
580	585	590	
Lys Thr Leu Ser Asp Lys Lys Ile Tyr Asn Val Lys Leu Glu Arg Gly			
595	600	605	
Met Asn Ile Leu Ile Lys Thr Pro Thr Tyr Phe Thr Asn Phe Asp Asp			
610	615	620	
Tyr Asn Asn Tyr Pro Ser Thr Trp Ser Asn Val Asn Thr Thr Asn Gln			
625	630	635	640
Asp Gly Leu Gln Gly Ser Ala Asn Lys Leu Asn Gly Glu Thr Lys Ile			
645	650		655
Lys Ile Pro Met Ser Glu Leu Lys Pro Tyr Lys Arg Tyr Val Phe Ser			
660	665	670	
Gly Tyr Ser Lys Asp Pro Leu Thr Ser Asn Ser Ile Ile Val Lys Ile			
675	680	685	

Lys Ala Lys Glu Glu Lys Thr Asp Tyr Leu Val Pro Glu Gln Gly Tyr
 690 695 700
 Thr Lys Phe Ser Tyr Glu Phe Glu Thr Thr Glu Lys Asp Ser Ser Asn
 705 710 715 720
 Ile Glu Ile Thr Leu Ile Gly Ser Gly Thr Thr Tyr Leu Asp Asn Leu
 725 730 735
 Ser Ile Thr Glu Leu Asn Ser Thr Pro Glu Ile Leu Asp Glu Pro Glu
 740 745 750
 Val Lys Ile Pro Thr Asp Gln Glu Ile Met Asp Ala His Lys Ile Tyr
 755 760 765
 Phe Ala Asp Leu Asn Phe Asn Pro Ser Thr Gly Asn Thr Tyr Ile Asn
 770 775 780
 Gly Met Tyr Phe Ala Pro Thr Gln Thr Asn Lys Glu Ala Leu Asp Tyr
 785 790 795 800
 Ile Gln Lys Tyr Arg Val Glu Ala Thr Leu Gln Tyr Ser Gly Phe Lys
 805 810 815
 Asp Ile Gly Thr Lys Asp Lys Glu Met Arg Asn Tyr Leu Gly Asp Pro
 820 825 830
 Asn Gln Pro Lys Thr Asn Tyr Val Asn Leu Arg Ser Tyr Phe Thr Gly
 835 840 845
 Gly Glu Asn Ile Met Thr Tyr Lys Lys Leu Arg Ile Tyr Ala Ile Thr
 850 855 860
 Pro Asp Asp Arg Glu Leu Leu Val Leu Ser Val Asp
 865 870 875

<210> 32
 <211> 875
 <212> PRT
 <213> Clostridium perfringens

<400> 32
 Met Asn Ile Gln Ile Lys Asn Val Phe Ser Phe Leu Thr Leu Thr Ala
 1 5 10 15
 Met Ile Ser Gln Thr Leu Ser Tyr Asn Val Tyr Ala Gln Thr Thr Thr
 20 25 30
 Gln Asn Asp Thr Asn Gln Lys Glu Glu Ile Thr Asn Glu Asn Thr Leu
 35 40 45
 Ser Ser Asn Gly Leu Met Gly Tyr Tyr Phe Ala Asp Glu His Phe Lys
 50 55 60
 Asp Leu Glu Leu Met Ala Pro Ile Lys Asn Gly Asp Leu Lys Phe Glu
 65 70 75 80
 Glu Lys Lys Val Asp Lys Leu Leu Thr Glu Asp Asn Ser Ser Ile Lys
 85 90 95
 Ser Ile Arg Trp Thr Gly Arg Ile Ile Pro Ser Glu Asp Gly Glu Tyr
 100 105 110
 Ile Leu Ser Thr Asp Arg Asn Asp Val Leu Met Gln Ile Asn Ala Lys
 115 120 125
 Gly Asp Ile Ala Lys Thr Leu Lys Val Asn Met Lys Lys Gly Gln Ala
 130 135 140
 Tyr-Asn-Ile-Arg-Ile-Glu-Ile-Gln-Asp-Lys-Asn-Leu-Gly-Ser-Ile-Asp
 145 150 155 160
 Asn Leu Ser Val Pro Lys Leu Tyr Trp Glu Leu Asn Gly Asn Lys Thr
 165 170 175
 Val Ile Pro Glu Glu Asn Leu Phe Phe Arg Asp Tyr Ser Lys Ile Asp
 180 185 190
 Glu Asn Asp Pro Phe Ile Pro Asn Asn Asn Phe Phe Asp Val Arg Phe
 195 200 205

Phe Ser Ala Ala Trp Glu Asp Glu Asp Leu Asp Thr Asp Asn Asp Asn
 210 215 220
 Ile Pro Asp Ala Tyr Glu Lys Asn Gly Tyr Thr Ile Lys Asp Ser Ile
 225 230 235 240
 Ala Val Lys Trp Asn Asp Ser Phe Ala Glu Gln Gly Tyr Lys Tyr
 245 250 255
 Val Ser Ser Tyr Leu Glu Ser Asn Thr Ala Gly Asp Pro Tyr Thr Asp
 260 265 270
 Tyr Gln Lys Ala Ser Gly Ser Ile Asp Lys Ala Ile Lys Leu Glu Ala
 275 280 285
 Arg Asp Pro Leu Val Ala Ala Tyr Pro Val Val Gly Val Gly Met Glu
 290 295 300
 Asn Leu Ile Ile Ser Thr Asn Glu His Ala Ser Ser Asp Gln Gly Lys
 305 310 315 320
 Thr Val Ser Arg Ala Thr Thr Asn Ser Lys Thr Asp Ala Asn Thr Val
 325 330 335
 Gly Val Ser Ile Ser Ala Gly Tyr Gln Asn Gly Phe Thr Gly Asn Ile
 340 345 350
 Thr Thr Ser Tyr Ser His Thr Thr Asp Asn Ser Thr Ala Val Gln Asp
 355 360 365
 Ser Asn Gly Glu Ser Trp Asn Thr Gly Leu Ser Ile Asn Lys Gly Glu
 370 375 380
 Ser Ala Tyr Ile Asn Ala Asn Val Arg Tyr Tyr Asn Thr Gly Thr Ala
 385 390 395 400
 Pro Met Tyr Lys Val Thr Pro Thr Thr Asn Leu Val Leu Asp Gly Glu
 405 410 415
 Thr Leu Ala Thr Ile Lys Ala Gln Asp Asn Gln Ile Gly Asn Asn Leu
 420 425 430
 Ser Pro Asn Glu Thr Tyr Pro Lys Lys Gly Leu Ser Pro Leu Ala Leu
 435 440 445
 Asn Thr Met Asp Gln Phe Asn Ala Arg Leu Ile Pro Ile Asn Tyr Asp
 450 455 460
 Gln Leu Lys Leu Asp Ser Gly Lys Gln Ile Lys Leu Glu Thr Thr
 465 470 475 480
 Gln Val Ser Gly Asn Tyr Gly Thr Lys Asn Ser Gln Gly Gln Ile Ile
 485 490 495
 Thr Glu Gly Asn Ser Trp Ser Asn Tyr Ile Ser Gln Ile Asp Ser Val
 500 505 510
 Ser Ala Ser Ile Ile Leu Asp Thr Gly Ser Gln Thr Phe Glu Arg Arg
 515 520 525
 Val Ala Ala Lys Glu Gln Gly Asn Pro Glu Asp Lys Thr Pro Glu Ile
 530 535 540
 Thr Ile Gly Glu Ala Ile Lys Ala Phe Ser Ala Thr Lys Asn Gly
 545 550 555 560
 Glu Leu Leu Tyr Phe Asn Gly Ile Pro Ile Asp Glu Ser Cys Val Glu
 565 570 575
 Leu Ile Phe Asp Asp Asn Thr Ser Glu Ile Ile Lys Glu Gln Leu Lys
 580 585 590
 Tyr Leu Asp Asp Lys Ile Tyr Asn Val Lys Leu Glu Arg Gly Met
 595 600 605
 Asn Ile Leu Ile Lys Val Pro Ser Tyr Phe Thr Asn Phe Asp Glu Tyr
 610 615 620
 Asn Asn Phe Pro Ala Ser Trp Ser Asn Ile Asp Thr Lys Asn Gln Asp
 625 630 635 640
 Gly Leu Gln Ser Val Ala Asn Lys Leu Ser Gly Glu Thr Lys Ile Ile
 645 650 655
 Ile Pro Met Ser Lys Leu Lys Pro Tyr Lys Arg Tyr Val Phe Ser Gly
 660 665 670

Tyr Ser Lys Asp Pro Ser Thr Ser Asn Ser Ile Thr Val Asn Ile Lys
 675 680 685
 Ser Lys Glu Gln Lys Thr Asp Tyr Leu Val Pro Glu Lys Asp Tyr Thr
 690 695 700
 Lys Phe Ser Tyr Glu Phe Glu Thr Thr Gly Lys Asp Ser Ser Asp Ile
 705 710 715 720
 Glu Ile Thr Leu Thr Ser Ser Gly Val Ile Phe Leu Asp Asn Leu Ser
 725 730 735
 Ile Thr Glu Leu Asn Ser Thr Pro Glu Ile Leu Lys Glu Pro Glu Ile
 740 745 750
 Lys Val Pro Ser Asp Gln Glu Ile Leu Asp Ala His Asn Lys Tyr Tyr
 755 760 765
 Ala Asp Ile Lys Leu Asp Thr Asn Thr Gly Asn Thr Tyr Ile Asp Gly
 770 775 780
 Ile Tyr Phe Glu Pro Thr Gln Thr Asn Lys Glu Ala Leu Asp Tyr Ile
 785 790 795 800
 Gln Lys Tyr Arg Val Glu Ala Thr Leu Gln Tyr Ser Gly Phe Lys Asp
 805 810 815
 Ile Gly Thr Lys Asp Lys Glu Ile Arg Asn Tyr Leu Gly Asp Gln Asn
 820 825 830
 Gln Pro Lys Thr Asn Tyr Ile Asn Phe Arg Ser Tyr Phe Thr Ser Gly
 835 840 845
 Glu Asn Val Met Thr Tyr Lys Lys Leu Arg Ile Tyr Ala Val Thr Pro
 850 855 860
 Asp Asn Arg Glu Leu Leu Val Leu Ser Val Asn
 865 870 875

<210> 33
 <211> 879
 <212> PRT
 <213> Clostridium spiroforme

<400> 33

Met Lys Asn Lys Lys Ile Leu Gly Leu Leu Thr Cys Thr Val Leu Val			
1 5 10 15			
Gly Gln Met Met Thr Tyr Pro Val Tyr Ala Lys Thr Ile Thr Gln Asn			
20 25 30			
Tyr Asp Asn Gln Glu Val Glu Thr Thr Asn Glu Lys Thr Val Ser Ser			
35 40 45			
Asn Gly Leu Met Gly Tyr Tyr Phe Ala Asp Glu His Phe Lys Asp Leu			
50 55 60			
Glu Leu Met Ala Pro Val Lys Asn Gly Glu Leu Lys Phe Glu Lys Asn			
65 70 75 80			
Lys Val Glu Lys Leu Leu Thr Glu Glu Lys Thr Asn Ile Lys Ser Ile			
85 90 95			
Arg Trp Thr Gly Arg Ile Ile Pro Ser Lys Asp Gly Glu Tyr Thr Leu			
100 105 110			
Ser Thr Asp Lys Asp Asn Val Leu Met Gln Ile Asn Ala Glu Gly Glu			
115 120 125			
Ile Ala Asn Thr Leu Lys Val Asn Met Ile Lys Gly Gln Glu Tyr Ser			
130 135 140			
Ile Arg Ile Glu Ile Gln Asp Lys Asp Ile Gly Tyr Val Asp Asp Leu			
145 150 155 160			
Ser Ser Pro Lys Leu Tyr Trp Glu Leu Asn Gly Asp Lys Thr Leu Ile			
165 170 175			
Pro Glu Lys Asn Leu Phe Leu Arg Asp Tyr Ser Lys Ile Asp Glu Asn			
180 185 190			

Asp	Pro	Phe	Ile	Pro	Lys	Asp	Asn	Phe	Phe	Asp	Leu	Lys	Leu	Lys	Ser
195						200						205			
Arg	Ser	Ala	Arg	Leu	Ala	Ser	Gly	Trp	Gly	Asp	Glu	Asp	Leu	Asp	Thr
210						215						220			
Asp	Asn	Asp	Asn	Ile	Pro	Asp	Ala	Tyr	Glu	Lys	Asn	Gly	Tyr	Thr	Ile
225						230				235			240		
Lys	Asp	Ser	Ile	Ala	Val	Lys	Trp	Glu	Asp	Ser	Phe	Ala	Gln	Gln	Gly
245						250						255			
Tyr	Lys	Lys	Tyr	Leu	Ser	Ser	Tyr	Leu	Glu	Ser	Asn	Thr	Ala	Gly	Asp
260						265						270			
Pro	Tyr	Thr	Asp	Tyr	Gln	Lys	Ala	Ser	Gly	Ser	Phe	Asp	Lys	Ala	Ile
275						280						285			
Lys	Ala	Glu	Ala	Arg	Asp	Pro	Leu	Val	Ala	Ala	Tyr	Pro	Val	Val	Gly
290						295					300				
Val	Gly	Met	Glu	Lys	Leu	Ile	Ile	Ser	Thr	Asn	Glu	His	Ala	Ser	Thr
305						310				315			320		
Asp	Gln	Gly	Lys	Thr	Val	Ser	Arg	Asn	Thr	Thr	Asn	Ser	Lys	Thr	Asp
325						330				335					
Ala	Asn	Thr	Ala	Gly	Val	Ala	Ile	Asn	Ile	Ala	Tyr	Gln	Asn	Gly	Phe
340						345					350				
Thr	Gly	Ser	Ile	Thr	Thr	Asn	Tyr	Ser	His	Thr	Thr	Glu	Asn	Ser	Thr
355						360					365				
Ala	Val	Gln	Asn	Ser	Asn	Gly	Glu	Ser	Trp	Asn	Thr	Ser	Leu	Ser	Ile
370						375					380				
Asn	Lys	Gly	Glu	Ser	Ala	Tyr	Ile	Asn	Ala	Asn	Val	Arg	Tyr	Tyr	Asn
385						390					395			400	
Thr	Gly	Thr	Ala	Pro	Met	Tyr	Lys	Val	Thr	Pro	Thr	Thr	Asn	Leu	Val
405						410					415				
Leu	Asp	Gly	Asp	Thr	Leu	Thr	Thr	Ile	Lys	Ala	Gln	Asp	Asn	Gln	Ile
420						425					430				
Gly	Asn	Asn	Leu	Ser	Pro	Asn	Glu	Thr	Tyr	Pro	Lys	Lys	Gly	Leu	Ser
435						440					445				
Pro	Leu	Ala	Leu	Asn	Thr	Met	Asp	Gln	Phe	Ser	Ser	Arg	Leu	Ile	Pro
450						455					460				
Ile	Asn	Tyr	Asp	Gln	Leu	Lys	Lys	Leu	Asp	Ala	Gly	Lys	Gln	Ile	Lys
465						470					475			480	
Leu	Glu	Thr	Thr	Gln	Val	Ser	Gly	Asn	Tyr	Gly	Ile	Lys	Asn	Ser	Gln
485						490					495				
Gly	Gln	Ile	Ile	Thr	Glu	Gly	Asn	Ser	Trp	Ser	Asp	Tyr	Ile	Ser	Gln
500						505					510				
Ile	Asp	Ser	Leu	Ser	Ala	Ser	Ile	Ile	Leu	Asp	Thr	Gly	Ser	Asp	Val
515						520					525				
Phe	Glu	Arg	Arg	Val	Thr	Ala	Lys	Asp	Ser	Ser	Asn	Pro	Glu	Asp	Lys
530						535					540				
Thr	Pro	Val	Leu	Thr	Ile	Gly	Glu	Ala	Ile	Glu	Lys	Ala	Phe	Gly	Ala
545						550					555			560	
Thr	Lys	Asn	Gly	Glu	Ile	Leu	Tyr	Phe	Asn	Gly	Met	Pro	Ile	Asp	Glu
565						570					575				
Ser	Cys	Val	Glu	Leu	Ile	Phe	Asp	Gly	Asn	Thr	Ala	Asn	Leu	Ile	Lys
580						585					590				
Glu	Arg	Leu	Asn	Ala	Leu	Asn	Asp	Lys	Lys	Ile	Tyr	Asn	Val	Gln	Leu
595						600					605				
Glu	Arg	Gly	Met	Lys	Ile	Leu	Ile	Lys	Thr	Ser	Thr	Tyr	Phe	Asn	Asn
610						615					620				
Phe	Asp	Gly	Tyr	Asn	Asn	Phe	Pro	Ser	Ser	Trp	Ser	Asn	Val	Asp	Ser
625						630					635			640	
Asn	Asn	Gln	Asp	Gly	Leu	Gln	Asn	Ala	Ala	Asn	Lys	Leu	Ser	Gly	Glu
645						650					655				

Thr Lys Ile Val Ile Pro Met Ser Lys Leu Asn Pro Tyr Lys Arg Tyr
 660 665 670
 Val Phe Ser Gly Tyr Leu Lys Asn Ser Ser Thr Ser Asn Pro Ile Thr
 675 680 685
 Val Asn Ile Lys Ala Lys Glu Gln Lys Thr Tyr Asn Leu Val Ser Glu
 690 695 700
 Asn Asp Tyr Lys Phe Ser Tyr Glu Phe Glu Thr Ile Gly Arg Asp
 705 710 715 720
 Ala Ser Asn Ile Glu Ile Thr Leu Thr Ser Ser Gly Thr Ile Phe Leu
 725 730 735
 Asp Asn Leu Ser Ile Thr Glu Leu Asn Ser Thr Pro Glu Ile Leu Lys
 740 745 750
 Glu Pro Asp Ile Lys Val Pro Ser Asp Gln Glu Ile Ile Asp Ala His
 755 760 765
 Lys Lys Tyr Tyr Ala Asp Leu Ser Phe Asn Gln Ser Thr Ala Asn Tyr
 770 775 780
 Tyr Leu Asp Gly Leu Tyr Phe Glu Pro Thr Gln Thr Asn Lys Glu Val
 785 790 795 800
 Leu Asp Tyr Ile Gln Lys Tyr Lys Val Glu Ala Thr Leu Glu Tyr Ser
 805 810 815
 Gly Phe Lys Asp Ile Gly Thr Lys Asp Lys Glu Leu Arg Asn Tyr Thr
 820 825 830
 Gly Asp Ser Asn Gln Pro Lys Thr Asn Tyr Val Asn Phe Arg Ser Tyr
 835 840 845
 Phe Thr Ser Gly Glu Asn Val Met Pro Tyr Lys Lys Leu Arg Ile Tyr
 850 855 860
 Ala Ile Thr Pro Glu Asn Lys Glu Leu Leu Val Leu Ser Ile Asn
 865 870 875

<210> 34

<211> 721

<212> PRT

<213> Clostridium botulinum

<400> 34

Met Leu Val Ser Lys Phe Glu Asn Ser Val Lys Asn Ser Asn Lys Asn
 1 5 10 15
 Tyr Phe Thr Ile Asn Gly Leu Met Gly Tyr Tyr Phe Glu Asn Asp Phe
 20 25 30
 Phe Asn Leu Asn Ile Ile Ser Pro Thr Leu Asp Gly Asn Leu Thr Phe
 35 40 45
 Ser Lys Glu Asp Ile Asn Ser Ile Leu Gly Asn Lys Ile Ile Lys Ser
 50 55 60
 Ala Arg Trp Ile Gly Leu Ile Lys Pro Ser Ile Thr Gly Glu Tyr Ile
 65 70 75 80
 Leu Ser Thr Asn Ser Pro Asn Cys Arg Val Glu Leu Asn Gly Glu Ile
 85 90 95
 Phe Asn Leu Ser Leu Asn Thr Ser Asn Thr Val Asn Leu Ile Gln Gly
 100 105 110
 Asn Val Tyr Asp Ile Arg Ile Glu Gln Leu Met Ser Glu Asn Gln Leu
 115 120 125
 Leu Lys Asn Tyr Glu Gly Ile Lys Leu Tyr Trp Glu Thr Ser Asp Ile
 130 135 140
 Ile Lys Glu Ile Ile Pro Ser Glu Val Leu Leu Lys Pro Asn Tyr Ser
 145 150 155 160
 Asn Thr Asn Glu Lys Ser Lys Phe Ile Pro Asn Asn Thr Leu Phe Ser
 165 170 175

Asn Ala Lys Leu Lys Ala Asn Ala Arg Asp Thr Asp Arg Asp Gly
 180 185 190
 Ile Pro Asp Glu Trp Glu Ile Asn Gly Tyr Thr Val Met Asn Gln Lys
 195 200 205
 Ala Val Ala Trp Asp Asp Lys Phe Ala Ala Asn Gly Tyr Lys Lys Tyr
 210 215 220
 Val Ser Asn Pro Phe Lys Pro Cys Thr Ala Asn Asp Pro Tyr Thr Asp
 225 230 235 240
 Phe Glu Lys Val Ser Gly Gln Ile Asp Pro Ser Val Ser Met Val Ala
 245 250 255
 Arg Asp Pro Met Ile Ser Ala Tyr Pro Ile Val Gly Val Gln Met Glu
 260 265 270
 Arg Leu Val Val Ser Lys Ser Glu Thr Ile Thr Gly Asp Ser Thr Lys
 275 280 285
 Ser Met Ser Lys Ser Thr Ser His Ser Ser Thr Asn Ile Asn Thr Val
 290 295 300
 Gly Ala Glu Val Ser Gly Ser Leu Gln Leu Ala Gly Gly Ile Phe Pro
 305 310 315 320
 Val Phe Ser Met Ser Ala Ser Ala Asn Tyr Ser His Thr Trp Gln Asn
 325 330 335
 Thr Ser Thr Val Asp Asp Thr Thr Gly Glu Ser Phe Ser Gln Gly Leu
 340 345 350
 Ser Ile Asn Thr Gly Glu Ser Ala Tyr Ile Asn Pro Asn Ile Arg Tyr
 355 360 365
 Tyr Asn Thr Gly Thr Ala Pro Val Tyr Asn Val Thr Pro Thr Thr Thr
 370 375 380
 Ile Val Ile Asp Lys Gln Ser Val Ala Thr Ile Lys Gly Gln Glu Ser
 385 390 395 400
 Leu Ile Gly Asp Tyr Leu Asn Pro Gly Gly Thr Tyr Pro Ile Ile Gly
 405 410 415
 Glu Pro Pro Met Ala Leu Asn Thr Met Asp Gln Phe Ser Ser Arg Leu
 420 425 430
 Ile Pro Ile Asn Tyr Asn Gln Leu Lys Ser Ile Asp Asn Gly Gly Thr
 435 440 445
 Val Met Leu Ser Thr Ser Gln Phe Thr Gly Asn Phe Ala Lys Tyr Asn
 450 455 460
 Ser Asn Gly Asn Leu Val Thr Asp Gly Asn Asn Trp Gly Pro Tyr Leu
 465 470 475 480
 Gly Thr Ile Lys Ser Thr Thr Ala Ser Leu Thr Leu Ser Phe Ser Gly
 485 490 495
 Gln Thr Thr Gln Val Ala Val Val Ala Pro Asn Phe Ser Asp Pro Glu
 500 505 510
 Asp Lys Thr Pro Lys Leu Thr Leu Glu Gln Ala Leu Val Lys Ala Phe
 515 520 525
 Ala Leu Glu Lys Lys Asn Gly Lys Phe Tyr Phe His Gly Leu Glu Ile
 530 535 540
 Ser Lys Asn Glu Lys Ile Gln Val Phe Leu Asp Ser Asn Thr Asn Asn
 545 550 555 560
 Asp Phe Glu Asn Gln Leu Lys Asn Thr Ala Asp Lys Asp Ile Met His
 565 570 575
 Cys Ile Ile Lys Arg Asn Met Asn Ile Leu Val Lys Val Ile Thr Phe
 580 585 590
 Lys Glu Asn Ile Ser Ser Ile Asn Ile Asn Asp Thr Asn Phe Gly
 595 600 605
 Val Gln Ser Met Thr Gly Leu Ser Asn Arg Ser Lys Gly Gln Asp Gly
 610 615 620
 Ile Tyr Arg Ala Ala Thr Thr Ala Phe Ser Phe Lys Ser Lys Glu Leu
 625 630 635 640

Lys Tyr Pro Glu Gly Arg Tyr Arg Met Arg Phe Val Ile Gln Ser Tyr
 645 650 655
 Glu Pro Phe Thr Cys Asn Phe Lys Leu Phe Asn Asn Leu Ile Tyr Ser
 660 665 670
 Ser Ser Phe Asp Lys Gly Tyr Tyr Asp Glu Phe Phe Tyr Phe Tyr Tyr
 675 680 685
 Asn Gly Ser Lys Ser Phe Phe Asn Ile Ser Cys Asp Ile Ile Asn Ser
 690 695 700
 Ile Asn Arg Leu Ser Gly Val Phe Leu Ile Glu Leu Asp Lys Leu Ile
 705 710 715 720
 Ile

<210> 35
 <211> 1338
 <212> PRT
 <213> *Bacillus cereus*

<400> 35
 Met Lys Arg Met Glu Gly Lys Leu Phe Met Val Ser Lys Lys Leu Gln
 1 5 10 15
 Val Val Thr Lys Thr Val Leu Leu Ser Thr Val Phe Ser Ile Ser Leu
 20 25 30
 Leu Asn Asn Glu Val Ile Lys Ala Glu Gln Leu Asn Ile Asn Ser Gln
 35 40 45
 Ser Lys Tyr Thr Asn Leu Gln Asn Leu Lys Ile Thr Asp Lys Val Glu
 50 55 60
 Asp Phe Lys Glu Asp Lys Glu Lys Ala Lys Glu Trp Gly Lys Glu Lys
 65 70 75 80
 Glu Lys Glu Trp Lys Leu Thr Ala Thr Glu Lys Gly Lys Met Asn Asn
 85 90 95
 Phe Leu Asp Asn Lys Asn Asp Ile Lys Thr Asn Tyr Lys Glu Ile Thr
 100 105 110
 Phe Ser Ile Ala Gly Ser Phe Glu Asp Glu Ile Lys Asp Leu Lys Glu
 115 120 125
 Ile Asp Lys Met Phe Asp Lys Thr Asn Leu Ser Asn Ser Ile Ile Thr
 130 135 140
 Tyr Lys Asn Val Glu Pro Thr Thr Ile Gly Phe Asn Lys Ser Leu Thr
 145 150 155 160
 Glu Gly Asn Thr Ile Asn Ser Asp Ala Met Ala Gln Phe Lys Glu Gln
 165 170 175
 Phe Leu Asp Arg Asp Ile Lys Phe Asp Ser Tyr Leu Asp Thr His Leu
 180 185 190
 Thr Ala Gln Gln Val Ser Ser Lys Glu Arg Val Ile Leu Lys Val Thr
 195 200 205
 Val Pro Ser Gly Lys Ser Thr Pro Thr Lys Ala Gly Val Ile
 210 215 220
 Leu Asn Asn Ser Glu Tyr Lys Met Leu Ile Asp Asn Gly Tyr Met Val
 225 230 235 240
 His Val Asp Lys Val Ser Lys Val Val Lys Lys Gly Val Glu Cys Leu
 245 250 255
 Gln Ile Glu Gly Thr Leu Lys Ser Leu Asp Phe Lys Asn Asp Ile
 260 265 270
 Asn Ala Glu Ala His Ser Trp Gly Met Lys Asn Tyr Glu Glu Trp Ala
 275 280 285
 Lys Asp Leu Thr Asp Ser Gln Arg Glu Ala Leu Asp Gly Tyr Ala Arg
 290 295 300

Gln Asp Tyr Lys Glu Ile Asn Asn Tyr Leu Arg Asn Gln Gly Gly Ser
 305 310 315 320
 Gly Asn Glu Lys Leu Asp Ala Gln Ile Lys Asn Ile Ser Asp Ala Leu
 325 330 335
 Gly Lys Lys Pro Ile Pro Glu Asn Ile Thr Val Tyr Arg Trp Cys Gly
 340 345 350
 Met Pro Glu Phe Gly Tyr Gln Ile Ser Asp Pro Leu Pro Ser Leu Lys
 355 360 365
 Asp Phe Glu Glu Gln Phe Leu Asn Thr Ile Lys Glu Asp Lys Gly Tyr
 370 375 380
 Met Ser Thr Ser Leu Ser Ser Glu Arg Leu Ala Ala Phe Gly Ser Arg
 385 390 395 400
 Lys Ile Ile Leu Arg Leu Gln Val Pro Lys Gly Ser Thr Gly Ala Tyr
 405 410 415
 Leu Ser Ala Ile Gly Phe Ala Ser Glu Lys Glu Ile Leu Leu Asp
 420 425 430
 Lys Asp Ser Lys Tyr His Ile Asp Lys Val Thr Glu Val Ile Ile Lys
 435 440 445
 Gly Val Lys Arg Tyr Val Val Asp Ala Thr Leu Leu Thr Asn Ser Arg
 450 455 460
 Gly Pro Ser Thr Pro Pro Ser Pro Ser Thr Pro Pro Thr Pro
 465 470 475 480
 Ser Asp Ile Gly Ser Thr Met Lys Thr Asn Gln Ile Ser Thr Thr Gln
 485 490 495
 Lys Asn Gln Gln Lys Glu Met Asp Arg Lys Gly Leu Leu Gly Tyr Tyr
 500 505 510
 Phe Lys Gly Lys Asp Phe Ser Asn Leu Thr Met Phe Ala Pro Thr Arg
 515 520 525
 Asp Ser Thr Leu Ile Tyr Asp Gln Gln Thr Ala Asn Lys Leu Leu Asp
 530 535 540
 Lys Lys Gln Gln Glu Tyr Gln Ser Ile Arg Trp Ile Gly Leu Ile Gln
 545 550 555 560
 Ser Lys Glu Thr Gly Asp Phe Thr Phe Asn Leu Ser Glu Asp Glu Gln
 565 570 575
 Ala Ile Ile Glu Ile Asn Gly Lys Ile Ile Ser Asn Lys Gly Lys Glu
 580 585 590
 Lys Gln Val Val His Leu Glu Lys Gly Lys Leu Val Pro Ile Lys Ile
 595 600 605
 Glu Tyr Gln Ser Asp Thr Lys Phe Asn Ile Asp Ser Lys Thr Phe Lys
 610 615 620
 Glu Leu Lys Leu Phe Lys Ile Asp Ser Gln Asn Gln Pro Gln Gln Val
 625 630 635 640
 Gln Gln Asp Glu Leu Arg Asn Pro Glu Phe Asn Lys Glu Ser Gln
 645 650 655
 Glu Phe Leu Ala Lys Pro Ser Lys Ile Asn Leu Phe Thr Gln Gln Met
 660 665 670
 Lys Arg Glu Ile Asp Glu Asp Thr Asp Thr Asp Gly Asp Ser Ile Pro
 675 680 685
 Asp Leu Trp Glu Glu Asn Gly Tyr Thr Ile Gln Asn Arg Ile Ala Val
 690 695 700
 Lys Trp Asp Asp Ser Leu Ala Ser Lys Gly Tyr Thr Lys Phe Val Ser
 705 710 715 720
 Asn Pro Leu Glu Ser His Thr Val Gly Asp Pro Tyr Thr Asp Tyr Glu
 725 730 735
 Lys Ala Ala Arg Asp Leu Asp Leu Ser Asn Ala Lys Glu Thr Phe Asn
 740 745 750
 Pro Leu Val Ala Ala Phe Pro Ser Val Asn Val Ser Met Glu Lys Val
 755 760 765

Ile Leu Ser Pro Asn Glu Asn Leu Ser Asn Ser Val Glu Ser His Ser
 770 775 780
 Ser Thr Asn Trp Ser Tyr Thr Asn Thr Glu Gly Ala Ser Val Glu Ala
 785 790 795 800
 Gly Ile Gly Pro Lys Gly Ile Ser Phe Gly Val Ser Val Asn Tyr Gln
 805 810 815
 His Ser Glu Thr Val Ala Gln Glu Trp Gly Thr Ser Thr Gly Asn Thr
 820 825 830
 Ser Gln Phe Asn Thr Ala Ser Ala Gly Tyr Leu Asn Ala Asn Val Arg
 835 840 845
 Tyr Asn Asn Val Gly Thr Gly Ala Ile Tyr Asp Val Lys Pro Thr Thr
 850 855 860
 Ser Phe Val Leu Asn Asn Asp Thr Ile Ala Thr Ile Thr Ala Lys Ser
 865 870 875 880
 Asn Ser Thr Ala Leu Asn Ile Ser Pro Gly Glu Ser Tyr Pro Lys Lys
 885 890 895
 Gly Gln Asn Gly Ile Ala Ile Thr Ser Met Asp Asp Phe Asn Ser His
 900 905 910
 Pro Ile Thr Leu Asn Lys Lys Gln Val Asp Asn Leu Leu Asn Asn Lys
 915 920 925
 Pro Met Met Leu Glu Thr Asn Gln Thr Asp Gly Val Tyr Lys Ile Lys
 930 935 940
 Asp Thr His Gly Asn Ile Val Thr Gly Gly Glu Trp Asn Gly Val Ile
 945 950 955 960
 Gln Gln Ile Lys Ala Lys Thr Ala Ser Ile Ile Val Asp Asp Gly Glu
 965 970 975
 Arg Val Ala Glu Lys Arg Val Ala Ala Lys Asp Tyr Glu Asn Pro Glu
 980 985 990
 Asp Lys Thr Pro Ser Leu Thr Leu Lys Asp Ala Leu Lys Leu Ser Tyr
 995 1000 1005
 Pro Asp Glu Ile Lys Glu Ile Glu Gly Leu Leu Tyr Tyr Lys Asn Lys
 1010 1015 1020
 Pro Ile Tyr Glu Ser Ser Val Met Thr Tyr Leu Asp Glu Asn Thr Ala
 1025 1030 1035 1040
 Lys Glu Val Thr Lys Gln Leu Asn Asp Thr Thr Gly Lys Phe Lys Asp
 1045 1050 1055
 Val Ser His Leu Tyr Asp Val Lys Leu Thr Pro Lys Met Asn Val Thr
 1060 1065 1070
 Ile Lys Leu Ser Ile Leu Tyr Asp Asn Ala Glu Ser Asn Asp Asn Ser
 1075 1080 1085
 Ile Gly Lys Trp Thr Asn Thr Asn Ile Val Ser Gly Gly Asn Asn Gly
 1090 1095 1100
 Lys Lys Gln Tyr Ser Ser Asn Asn Pro Asp Ala Asn Leu Thr Leu Asn
 1105 1110 1115 1120
 Thr Asp Ala Gln Glu Lys Leu Asn Lys Asn Arg Asp Tyr Tyr Ile Ser
 1125 1130 1135
 Leu Tyr Met Lys Ser Glu Lys Asn Thr Gln Cys Glu Ile Thr Ile Asp
 1140 1145 1150
 Gly Glu Ile Tyr Pro Ile Thr Thr Lys Thr Val Asn Val Asn Lys Asp
 1155 1160 1165
 Asn Tyr Lys Arg Leu Asp Ile Ile Ala His Asn Ile Lys Ser Asn Pro
 1170 1175 1180
 Ile Ser Ser Leu His Ile Lys Thr Asn Asp Glu Ile Thr Leu Phe Trp
 1185 1190 1195 1200
 Asp Asp Ile Ser Ile Thr Asp Val Ala Ser Ile Lys Pro Glu Asn Leu
 1205 1210 1215
 Thr Asp Ser Glu Ile Lys Gln Ile Tyr Ser Arg Tyr Gly Ile Lys Leu
 1220 1225 1230

Glu Asp Gly Ile Leu Ile Asp Lys Lys Gly Gly Ile His Tyr Gly Glu
1235 1240 1245
Phe Ile Asn Glu Ala Ser Phe Asn Ile Glu Pro Leu Gln Asn Tyr Val
1250 1255 1260
Thr Lys Tyr Glu Val Thr Tyr Ser Ser Glu Leu Gly Pro Asn Val Ser
1265 1270 1275 1280
Asp Thr Leu Glu Ser Asp Lys Ile Tyr Lys Asp Gly Thr Ile Lys Phe
1285 1290 1295
Asp Phe Thr Lys Tyr Ser Lys Asn Glu Gln Gly Leu Phe Tyr Asp Ser
1300 1305 1310
Gly Leu Asn Trp Asp Phe Lys Ile Asn Ala Ile Thr Tyr Asp Gly Lys
1315 1320 1325
Glu Met Asn Val Phe His Arg Tyr Asn Lys
1330 1335